OREMS
BASIN 03
RELIEF SEWER
BALTIMORE COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

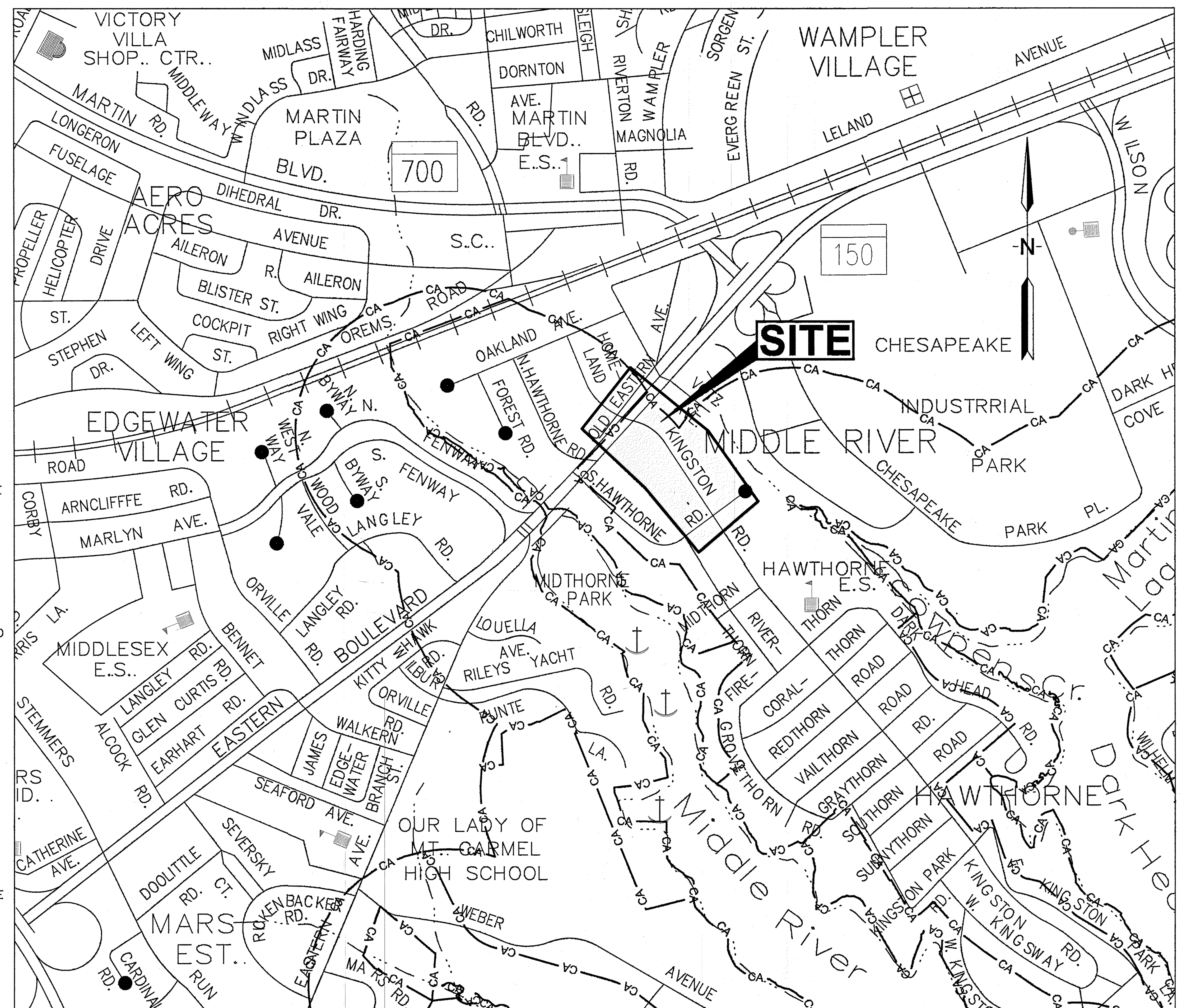
GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2000 OR LATEST, ALL REVISIONS OR ADDENDA, STANDARD DETAILS FOR CONSTRUCTION DATED FEB. 2007 OR LATEST, CONTRACT DRAWINGS AND TECHNICAL SPECIFICATIONS.
2. FOR THESE DRAWINGS, NEW WORK/UTILITIES ARE INDICATED BY HEAVY LINES. EXISTING UTILITIES ARE INDICATED BY LIGHT LINES.
3. CONTRACTOR SHALL NOTIFY THE CHIEF OF INSPECTIONS, BALTIMORE COUNTY BUREAU OF ENGINEERING AND CONSTRUCTION AT 410-887-3531 AND BALTIMORE CITY BUREAU OF WATER AND WASTEWATER AT 410-396-7807, AT LEAST SEVEN (7) WORKING DAYS BEFORE START OF CONSTRUCTION.
4. CONTRACTOR SHALL CONTACT "MISS UTILITY" AT LEAST FIVE (5) WORKING DAYS PRIOR TO CONSTRUCTION BY CALLING 1-800-257-7777.
5. CONTRACTOR SHALL NOTIFY MD STATE HIGHWAY ADMINISTRATION PRIOR TO BEGINNING ANY WORK WITHIN THE SHA RIGHT-OF-WAY. SEE SHA PERMIT.
6. CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, BALTIMORE COUNTY, AT 410-887-3560 AT LEAST FIVE (5) WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS.
7. CONTRACTOR SHALL NOTIFY RESIDENTS AT LEAST 96 HOURS PRIOR TO BEGINNING WORK ON THE SANITARY SEWER.
8. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN JULY 2016 BY MERCADO CONSULTANTS INC.
9. THE LOCATION OF SOIL BORINGS ARE SHOWN ON THE DRAWINGS. SEE SPECIAL PROVISIONS FOR SOIL BORING LOGS AND GEOTECHNICAL REPORT.
10. CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES AND COORDINATE ALL WORK WITH THE BUSINESS ACTIVITIES OF ANY PROPERTY(S) AFFECTED BY THE WORK.
11. FULL TRENCH COMPACTION SHALL BE USED THROUGHOUT ALL ROADS AND ROAD RIGHT-OF-WAYS.
12. TRENCHES SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAILS, PLATES G-6 AND G-7. TRENCHES WITH A DEPTH GREATER THAN SIXTEEN (16) FEET SHALL BE DOUBLE BOXED. TRENCH REPAIR SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAIL, PLATE R-38.
13. IF DEWATERING IS REQUIRED, THE CONTRACTOR SHALL CONDUCT THE OPERATION USING AN APPROVED METHOD. IN THE EVENT THAT TRENCH SECTIONS OR PITS BECOME INUNDATED WITH WATER, CONTRACTOR SHALL PUMP TO A PORTABLE SEDIMENT TANK OR SUMP PIT.
14. THE COST OF CONNECTING TO EXISTING SEWER AND/OR MANHOLES, INCLUDING THE CONSTRUCTION OF A NEW CHANNEL OR MODIFICATION OF AN EXISTING CHANNEL, IS CONSIDERED INCIDENTAL AND WILL BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY SEWER PIPE.
15. WHEN CONNECTING TO ANY EXISTING MANHOLE, THE MANHOLE MUST BE CORE DRILLED AND "A-LOCK" CONNECTOR, OR APPROVED EQUAL, MUST BE USED. ALL COSTS TO BE INCLUDED IN THE UNIT PRICE BID FOR PIPE OR MANHOLE.
16. THE COST FOR CONSTRUCTION UNDER AND/OR OVER ANY EXISTING UTILITIES AND UTILITY SERVICE HOUSE CONNECTIONS INCLUDING GAS, ELECTRIC, CABLE, STORM DRAINS, WATER, AND SEWER SHALL BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY SEWER PIPE.
17. SEWAGE FLOW IN EXISTING SEWER AND HOUSE CONNECTIONS IS TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. AT NO TIME WILL IT BE PERMITTED FOR SEWAGE TO BE DISCHARGED ONTO THE GROUND OR INTO ANY STREAMS. ALL COSTS TO MAINTAIN FLOW, INCLUDING ANY PUMPING NEEDED, ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY SEWER PIPE.
18. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT POSSIBLE. CONTRACTOR TO REMOVE THE STUMPS AND ROOTS OF ANY TREE OR SHRUB THAT NEEDS REMOVAL. ANY EXISTING STUMPS WITHIN THE LIMIT OF DISTURBANCE ALSO WILL BE REMOVED. ALL COSTS FOR REMOVAL OF TREES, SHRUBS, STUMPS, ETC. WILL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "CLEARING AND GRUBBING".
19. THE EXISTING UTILITIES AND OTHER EXISTING FEATURES SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND THE ACCURACY AND COMPLETENESS OF THIS INFORMATION IS NOT GUARANTEED. THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND SHALL MAINTAIN UNINTERRUPTED SUPPLY. WHEN CROSSING EXISTING UTILITIES THE CONTRACTOR IS TO SUPPORT, BRACE AND PROTECT SUCH UTILITIES DURING CONSTRUCTION. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.
20. UNDERGROUND UTILITIES (ELECTRIC, WATER ETC.) MAY, OR MAY NOT, EXIST ON THE HOMEOWNERS PROPERTY. THE LOCATION OF THESE SERVICES ARE UNKNOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGING THESE SERVICES. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO MAINTAIN THE ACCESS ROADS IN A USEABLE AND STABILIZED CONDITION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR REMOVING ANY MATERIAL USED TO MAINTAIN THE ACCESS ROADS AND RESTORING THE ROADS TO PRE-CONSTRUCTION CONDITION PRIOR TO PERMANENT STABILIZATION. ALL COSTS FOR THIS WORK TO BE INCLUDED IN OTHER ITEMS BID. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THIS WORK.
22. CONTRACTOR IS REQUIRED TO VISIT JOB SITE PRIOR TO SUBMITTING BID.
23. PRIOR TO THE SCHEDULING OF A PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT A PRELIMINARY DETAILED TRAFFIC CONTROL PLAN FOR REVIEW BY THE BUREAU OF TRAFFIC ENGINEERING, DEPARTMENT OF PUBLIC WORKS, THE TRAFFIC CONTROL PLAN AS WELL AS ALL TRAFFIC CONTROL DEVICES UTILIZED ON THE PROJECT MUST COMPLY WITH THE "FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS. FOLLOWING APPROVAL OF THE PLAN, A REPRODUCIBLE DRAWING SHALL BE SUBMITTED TO THE OFFICE OF THE DIRECTOR OF PUBLIC WORKS FOR USE AND DISTRIBUTION, AND A COPY SHALL ALSO BE SUBMITTED TO THE ENGINEER.
24. CONTRACTOR SHALL HAVE A SET OF SPECIFICATIONS AND A COMPLETE SET OF DRAWINGS ON SITE AT ALL TIMES.
25. CONTRACTOR SHALL CONFORM TO THE "MARYLAND HIGH VOLTAGE LINE ACT" AND SHALL CONTRACT THE NECESSARY AUTHORITIES PRIOR TO START OF CONSTRUCTION.
26. CONTRACTOR SHALL ENSURE SEWER SERVICE TO AFFECTED PARCELS AT ALL TIMES.
27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING THE TRACKING OF DIRT AND MUD ONTO ROADS AND PUBLIC RIGHTS-OF-WAY. CONSTRUCTION ENTRANCES TO EASEMENTS MAY BE INSTALLED IF APPROVED BY THE ENGINEER, AND SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE COUNTY. THE CONTRACTOR SHALL CLEAN UP ALL DIRT OR MUD TRACKED ONTO ROADS AND PUBLIC RIGHTS-OF-WAY IMMEDIATELY. THE CONTRACTOR SHALL SCHEDULE AND MEET WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO CONSTRUCTION.
28. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WRITTEN PERMISSION TO ACCESS THE SANITARY FACILITIES ACROSS PRIVATE PROPERTIES.
29. NO STAGING OF EQUIPMENT OR STOCKPILING OF MATERIAL SHALL OCCUR WITHIN 75' OF ANY STREAM, WITHIN LIMITS OF WETLAND OR WITHIN THE 100 YEAR FLOODPLAIN.
30. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEWER BYPASS PUMPING SERVICES DURING CONSTRUCTION FOR SEWER AND MANHOLE WORK ON ACTIVE PIPELINES IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

SANITARY SEWER OVERFLOW (SSO) NOTE

THE CONTRACTOR UNDERSTANDS THAT BALTIMORE COUNTY SHALL INCUR SIGNIFICANT AND SUBSTANTIAL STIPULATED PENALTIES PURSUANT TO A CONSENT DECREE ENTERED IN U.S. DISTRICT COURT FOR THE DISTRICT OF MARYLAND BY AND AMONG THE UNITED STATES OF AMERICA, THE STATE OF MARYLAND, AND BALTIMORE COUNTY. IN THE EVENT THAT SEWAGE IS DISCHARGED ONTO THE GROUND OR INTO ANY STREAMS IN CONNECTION WITH ANY AND ALL OTHER DAMAGES, COSTS AND EXPENSES OF THE COUNTY, SHALL BE LIABILITY AND OBLIGATION OF THE CONTRACTOR UNDER THIS CONTRACT.

KCI TECHNOLOGIES PROJECT No.: 13144992.03



LOCATION MAP
SCALE: 1"=600'
0 1 2
600 300 600
SCALE: 1" = 600'

INDEX OF DRAWINGS		
SHEET NO.	SHEET DESIGNATION	DESCRIPTION
1	G-01	TITLE SHEET, GENERAL NOTES AND LIST OF DRAWINGS
2	C-01	SEWER PLAN AND PROFILE
3	ES-01	GRADING/EROSION AND SEDIMENT CONTROL PLAN
4	ES-02	GRADING/EROSION AND SEDIMENT CONTROL DETAILS
5	ES-03	GRADING/EROSION AND SEDIMENT CONTROL NOTES
6	ES-04	GRADING/EROSION AND SEDIMENT CONTROL NOTES
7	ES-05	GRADING/EROSION AND SEDIMENT CONTROL NOTES
8	ES-06	GRADING/EROSION AND SEDIMENT CONTROL NOTES

BALTIMORE COUNTY EPS NOTE

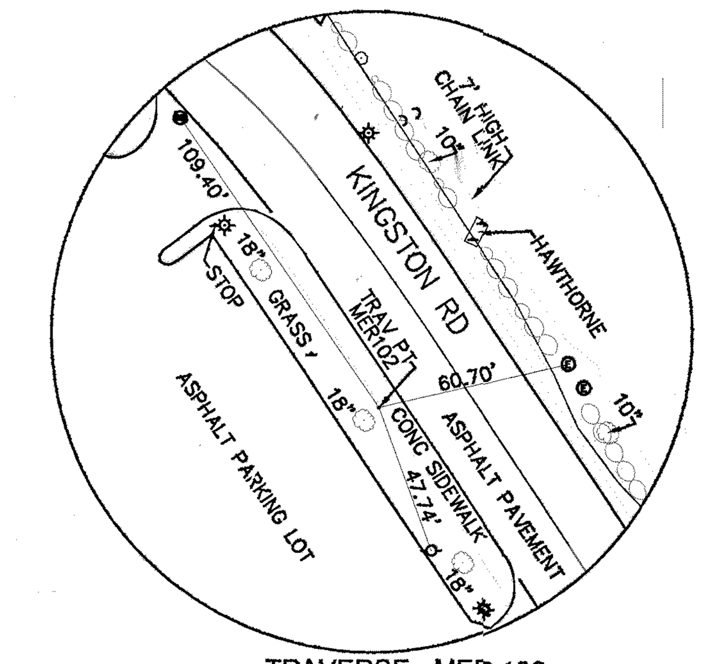
THE PROJECT SITE IS LOCATED WITHIN BOTH THE INTENSELY AND LIMITED DEVELOPED AREA (IDA AND LDA) OF THE CHESAPEAKE BAY CRITICAL AREA. ALL WORK IS LOCATED WITHIN EXISTING PAVED ROADWAY, EXISTING PAVED PARKING AREAS AND EXISTING GRASS ROADWAY MEDIAN STRIPS.

STORMWATER MANAGEMENT NOTE

STORMWATER MANAGEMENT HAS BEEN ADDRESSED THROUGH A STORMWATER MANAGEMENT VARIANCE.

LEGEND

Symbol	Description	Symbol	Description
	EX. SANITARY MANHOLE	OH	EX. OVERHEAD WIRE
	EX. STORM DRAIN MANHOLE		EX. GUARD RAIL
	EX. LIGHT POLE	SD	EX. STORM DRAIN
	EX. WATER METER	S	EX. SANITARY SEWER
	EX. SIGN	X	EX. FENCE LINE
	EX. UTILITY POLE	G	EX. GAS
	EX. BUSH	W	EX. WATER
	EX. DECIDUOUS TREE	E	EX. UG ELECTRIC
	EX. CONIFEROUS TREE	WUS	EX. WATERS OF U.S.
	EX. MAIL BOX	SB	EX. STREAM BUFFER
	EX. GUY WIRE	WL	EX WETLAND
AC	EX. A/C UNIT	WB	EX. WETLAND BUFFER
CO	EX. CLEANOUT	FB	EX. FOREST BUFFER
P/A	EX. PLANTING AREA		EX. WOODS LINE
B-XX	SOIL BORING		EX. EDGE OF PAVEMENT
TP-XX	TEST PIT		EX. CURB & GUTTER
CIP	CURB INLET PROTECTION		CENTERLINE OF STREAM
AGIP	AT GRADE INLET PROTECTION	100yr	EX. 100 YEAR FLOODPLAIN
CA	CHESAPEAKE BAY CRITICAL AREA	295	EX. CONTOUR LINE
SF SF	SILT FENCE		EX. PROPERTY LINE
LOD	LIMIT OF DISTURBANCE		PROP. SANITARY SEWER
	TEMPORARY CONSTRUCTION EASEMENT	S	PROP. SEWER MANHOLE
	DRAINAGE & UTILITY EASEMENT		TRAVERSE POINT



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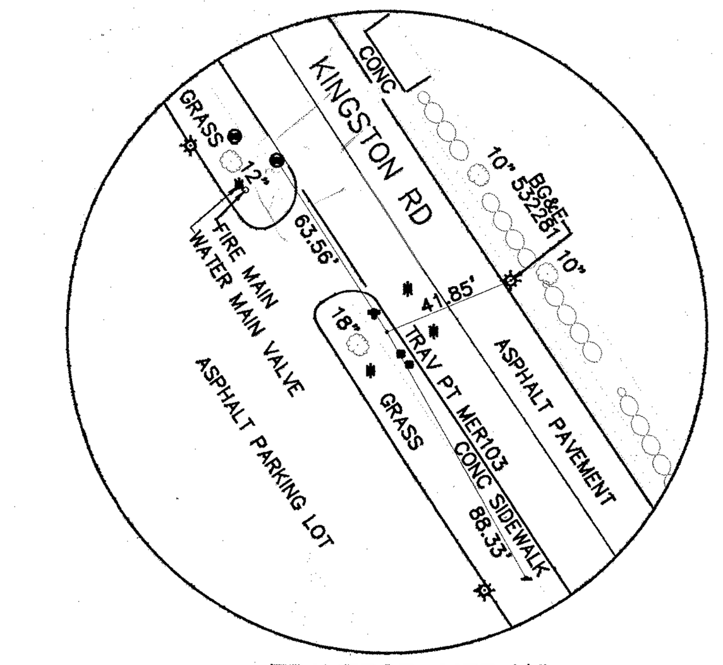
EL 21.83



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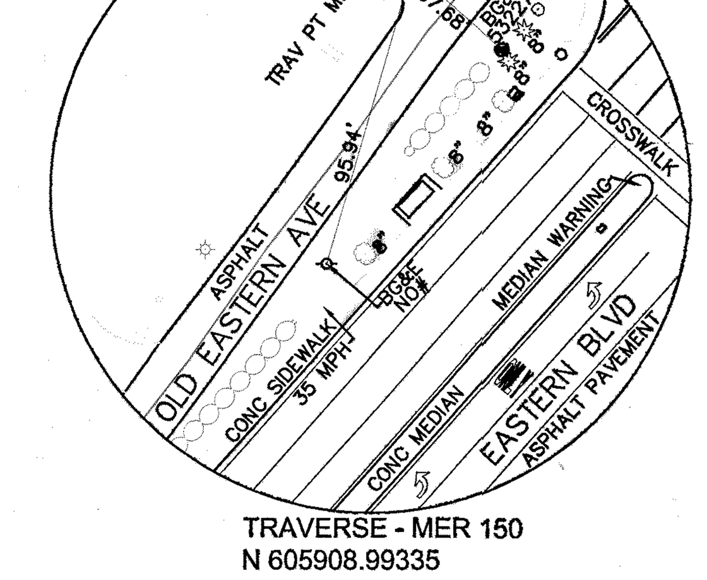

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EL 21.11

TRAVERSE POINTS

SCALE: NOT TO SCALE

SURVEY CONTROL

1.THE MERIDIAN SOURCE OF THIS TOPOGRAPHIC SURVEY IS BASED ON THE MARYLAND STATE COORDINATE SYSTEM, THE PROJECT MERIDIAN OF NAD 1983/1991 WAS ESTABLISHED USING GPS METHODS.

2.ELEVATIONS REFER TO NAVD 1988 AND WERE ESTABLISHED USING GPS METHODS.

3.THE FOLLOWING BALTIMORE COUNTY CONTROL MONUMENTS WERE USED AS A CHECK:

NAME	NORTH	EAST	ELEV.	DESC.
CBM201			20.78	X-CUT IN CONC. BASE OF SIGNAL POLE
977	603036.64	1472779.70	17.99	CAPPED REBAR
1287	604797.19	1473071.69	16.00	CAPPED REBAR

DESIGN & DRAWINGS BASED ON MARYLAND COORDINATE SYSTEM (MCS) HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

BALTIMORE COUNTY SOIL CONSERVATION DISTRICT

APPROVED FOR SEDIMENT CONTROL 5-5-20 DATE

Jeffrey P. West — DISTRICT OFFICIAL — 064-37H6-20 PLAN NO.

TECHNICAL REVIEW FOR THE DISTRICT BY: Sara C. Dulina

THIS PLAN APPROVAL WILL EXPIRE THREE (3) YEARS FROM THE APPROVAL DATE.

OWNER'S/DEVELOPER'S CERTIFICATION - GRADING

I/WE HEREBY CERTIFY THAT ALL GRADING ON THIS SITE WILL BE DONE IN ACCORDANCE WITH THE CURRENT GRADING REQUIREMENTS AS SET FORTH BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND WITH THE REQUIREMENTS SPECIFIED IN ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE.

OWNER'S/DEVELOPER'S SIGNATURE — TITLE: DIRECTOR OF PUBLIC WORKS — DATE: 4/23/2020

PRINT NAME: STEVEN A. WALSH

BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

APPROVED FOR GRADING — 05.20.2020 DATE

SEAL	PROFESSIONAL CERTIFICATION		AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT	DRAWING SCALE		DEPARTMENT OF PUBLIC WORKS
	I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 200436, EXPIRATION DATE 09/30/2021.						N - SW	11 NE 33 12 NE 34	PLAN SCALE:	1" = 600'-0"	APPROVED BY: DIRECTOR
						R.O.W NO.	N - NE		PROFILE SCALE:		DATE: 4/17/2020
	ENGINEER: JOHN A. BLONDELL	DGN BY: JAB	BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER	BUR. OF ENGINEERING & CONSTRUCTION
	KCI TECHNOLOGIES 936 Ridgebrook Road Sparks, Maryland 21152.	DWN BY: KFJ	REVIEWED BY:					GAK		KRG	APPROVED BY: CHIEF
DATE: 04/09/2020	Telephone: (410)316-7800 Fax: (410)316-7818	CHKD BY: JAB	DATE REVIEWED:					4/14/20		4/17/20	DATE:

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
TITLE SHEET, GENERAL NOTES AND LIST OF DRAWINGS

SUBDIVISION: HAWTHORNE

ELECTION DIST. NO.:15C6

SHEET DESIGNATION	CONTRACT NUMBER
G-01	21144 SXO RE-BID
	JOB ORDER NUMBER
	231-201-0077-7240
	SHEET 1 OF 8
	DRAWING NUMBER
	2018 - 2451
	FILE NO.: 1

Apr 09, 2020 - 2:03pm User: kevin.jackson
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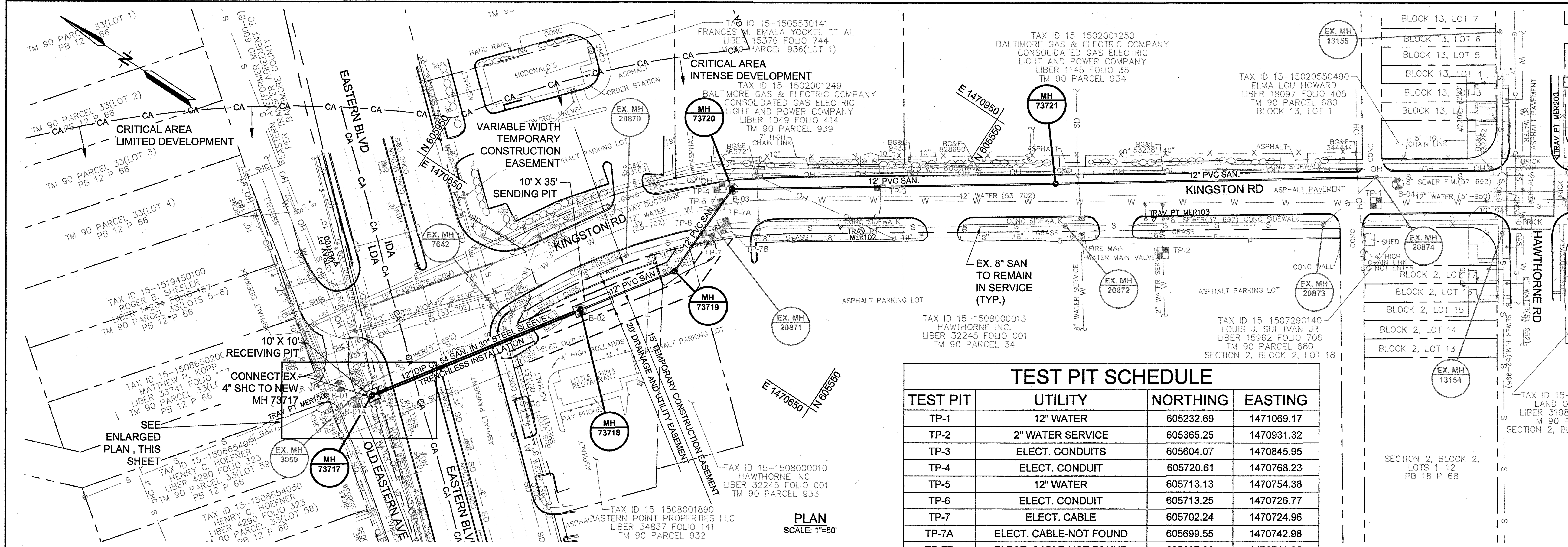


TEST PIT SCHEDULE

TEST PIT	UTILITY	NORTHING	EASTING
TP-1	12" WATER	605232.69	1471069.17
TP-2	2" WATER SERVICE	605365.25	1470931.32
TP-3	ELECT. CONDUITS	605604.07	1470845.95
TP-4	ELECT. CONDUIT	605720.61	1470768.23
TP-5	12" WATER	605713.13	1470754.38
TP-6	ELECT. CONDUIT	605713.25	1470726.77
TP-7	ELECT. CABLE	605702.24	1470724.96
TP-7A	ELECT. CABLE-NOT FOUND	605699.55	1470742.98
TP-7B	ELECT. CABLE-NOT FOUND	605697.08	1470741.23
TP-8	TELECOMM CONDUITS	605870.34	1470451.84

NOTES:

1. 48" PRECAST MANHOLES SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAIL , PLATE S-4.
2. DROP CONNECTIONS SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAIL, PLATE S-6.
3. "DOGHOUSE" MANHOLES SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAIL, PLATE S-15.
4. HEAVY TRAFFIC FRAME AND COVER SHALL BE IN ACCORDANCE WITH BALTIMORE COUNTY STANDARD DETAIL, PLATE S-8.

BILL OF MATERIALS

QUANTITY	ITEM / DESCRIPTION
65 V.F.	48" PRECAST MANHOLE
5 V.F.	48" PRECAST DOGHOUSE MANHOLE BASE
738 L.F.	12" PVC SEWER
197 L.F.	12" CL 54 DIP SEWER
188 L.F.	30" STEEL SLEEVE CASING PIPE

STRUCTURE STAKE-OUT

STRUCTURE	NORTHING	EASTING
MH 73717	605875.44	1470450.25
MH 73718	605763.75	1470611.83
MH 73719	605713.24	1470684.89
MH 73720	605710.33	1470772.48
MH 73721	605476.58	1470930.84

ADVANCED PRODUCTS & SYSTEMS
PART#: SSI8-2-1230-CR-2-V
OR APPROVED EQUAL

BAND
8" WIDE
14 GA. (.074") 304 STAINLESS STEEL
2-B FINISH
RIBBED FLANGES

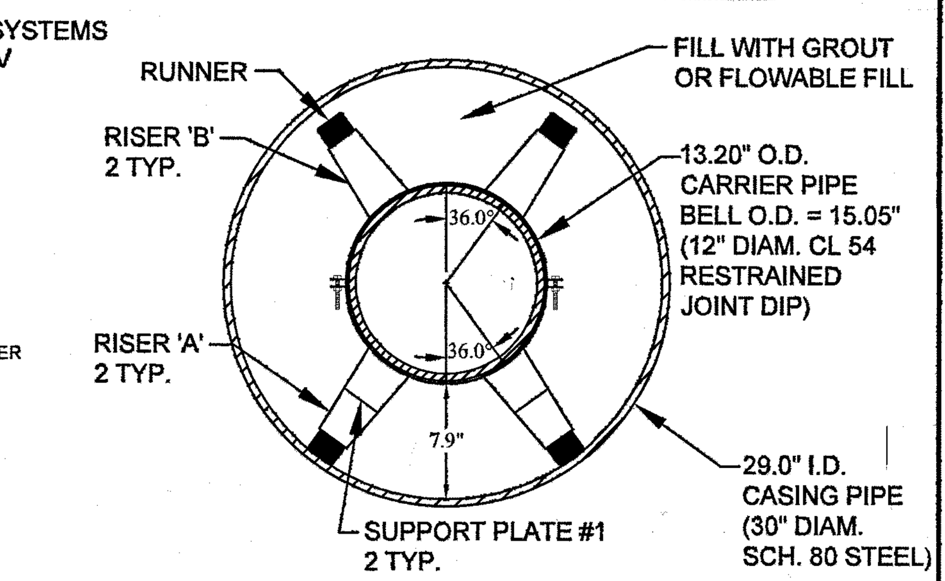
LINER
PVC LINER
HARDNESS - DUROMETER "A" 85-90
OPERATING TEMP: 140 F
DIELECTRIC STRENGTH - 60,000 VPM

RUNNER
2" WIDE X 1 1/2" HIGH MOLDED POLYMER
2 TOP, 2 BOTTOM

RISERS
10 GA. (.134) 304 STAINLESS STEEL
MIG WELDED TO BAND
RISER 'A' = 4.125" TALL
RISER 'B' = 5.1875" TALL

SUPPORT PLATES
10 GA. (.134) 304 STAINLESS STEEL
MIG WELDED TO BAND
SUPPORT PLATE #1 = 2.75" LONG

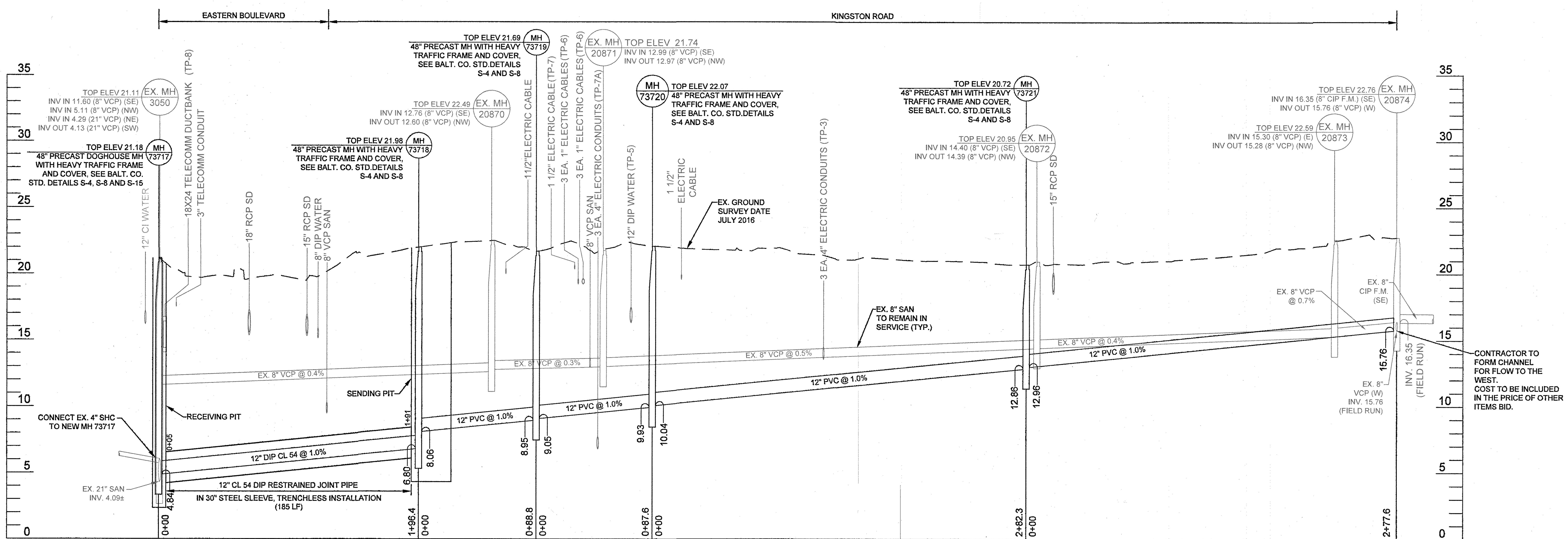
ASSEMBLY HARDWARE
3 SETS PER FLANGE
1/4" - 20 X 2" STAINLESS STEEL BOLTS
1/4" STAINLESS STEEL WASHERS
1/4" STAINLESS STEEL NUTS



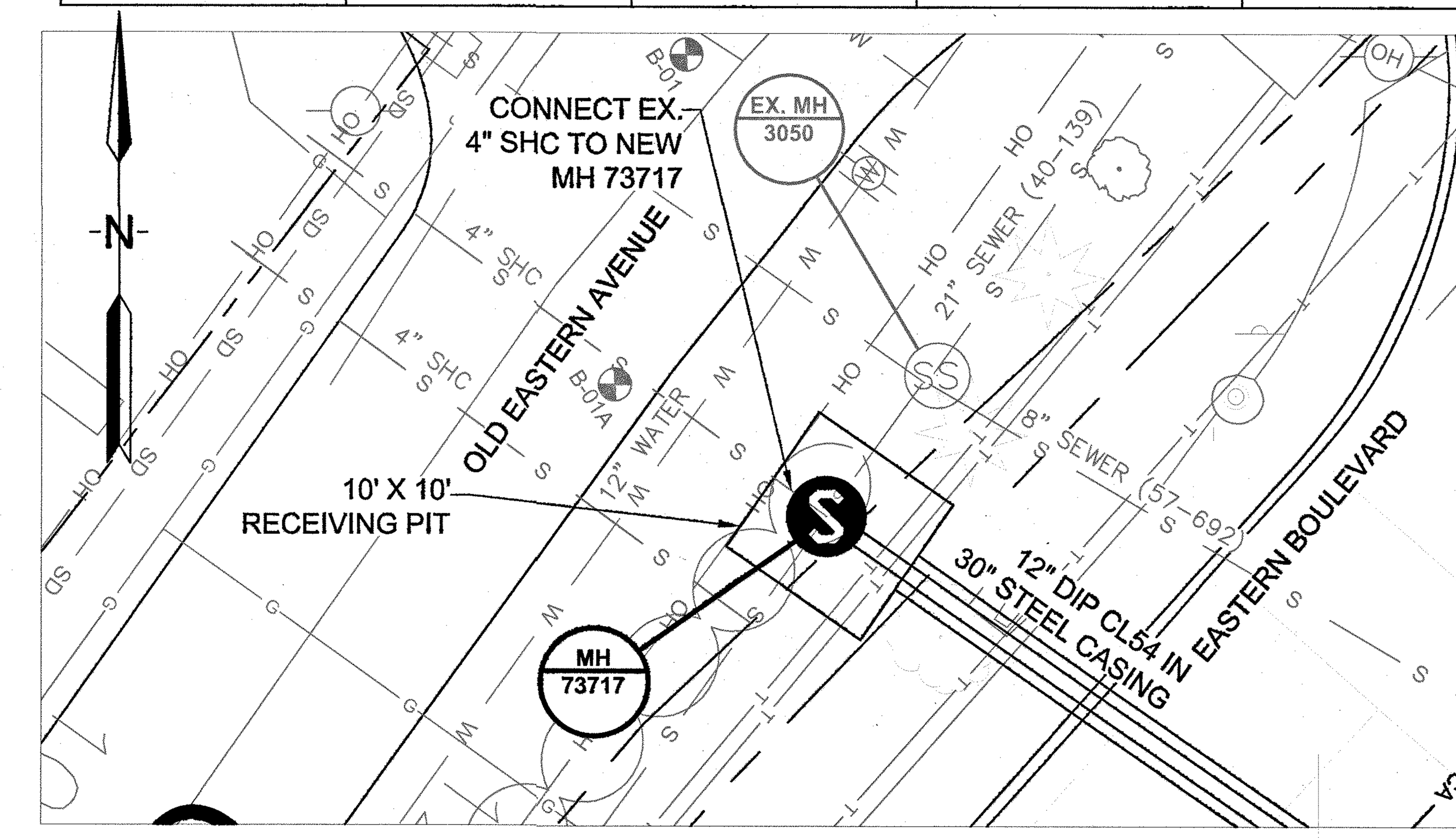
CASING SPACER DETAIL
NOT TO SCALE

SOIL BORING SCHEDULE

BORING NO.	NORTHING	EASTING	GROUND ELEV.	BORING DEPTH
B-01	605903.72	1470441.63	21.43	21.5'
B-01A	605884.19	1470437.60	21.10	22'
B-02	605763.75	1470611.83	21.98	21'
B-03	605710.33	1470722.48	22.07	18'
B-04	605225.86	1471093.22	23.03	14'



PROFILE
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'



ENLARGED PLAN
SCALE: 1"=10'

DESIGN & DRAWINGS BASED ON
MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

KCI TECHNOLOGIES PROJECT No.: 13144992.03

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SEAL

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436 , EXPIRATION DATE 09/30/2021 .

ENGINEER: JOHN A. BLONDELL
KCI TECHNOLOGIES
936 Ridgebrook Road
Sparks, Maryland 21152.
Telephone: (410)316-7800
Fax: (410)316-7818

DATE : 04/09/2020

DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT
				N - SW	11 NE 33
			R.O.W NO.	N - NE	12 NE 34

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER

REVIEWED BY:
DATE REVIEWED:

FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451

DRAWING SCALE
PLAN SCALE: 1" = 50'-0"
PROFILE SCALE: H:1" = 50'-0" V:1" = 5'-0"

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: DIRECTOR
DATE:
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: CHIEF
DATE:

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
SEWER PLAN AND PROFILE

SUBDIVISION: HAWTHORNE
ELECTION DIST. NO.:15C6

SHEET DESIGNATION: C-01
CONTRACT NUMBER: 2U44 SXO REBID
JOB ORDER NUMBER: 231-201-0077-7240
SHEET 2 OF 8
DRAWING NUMBER: 2018 - 2452
FILE NO.: 1

DJB

SURVEY CONTROL

1. THE MERIDIAN SOURCE OF THIS TOPOGRAPHIC SURVEY IS BASED ON THE MARYLAND STATE COORDINATE SYSTEM, THE PROJECT MERIDIAN OF NAD 1983/1991 WAS ESTABLISHED USING GPS METHODS.
2. ELEVATIONS REFER TO NAVD 1988 AND WERE ESTABLISHED USING GPS METHODS.
3. THE FOLLOWING BALTIMORE COUNTY CONTROL MONUMENTS WERE USED AS A CHECK:

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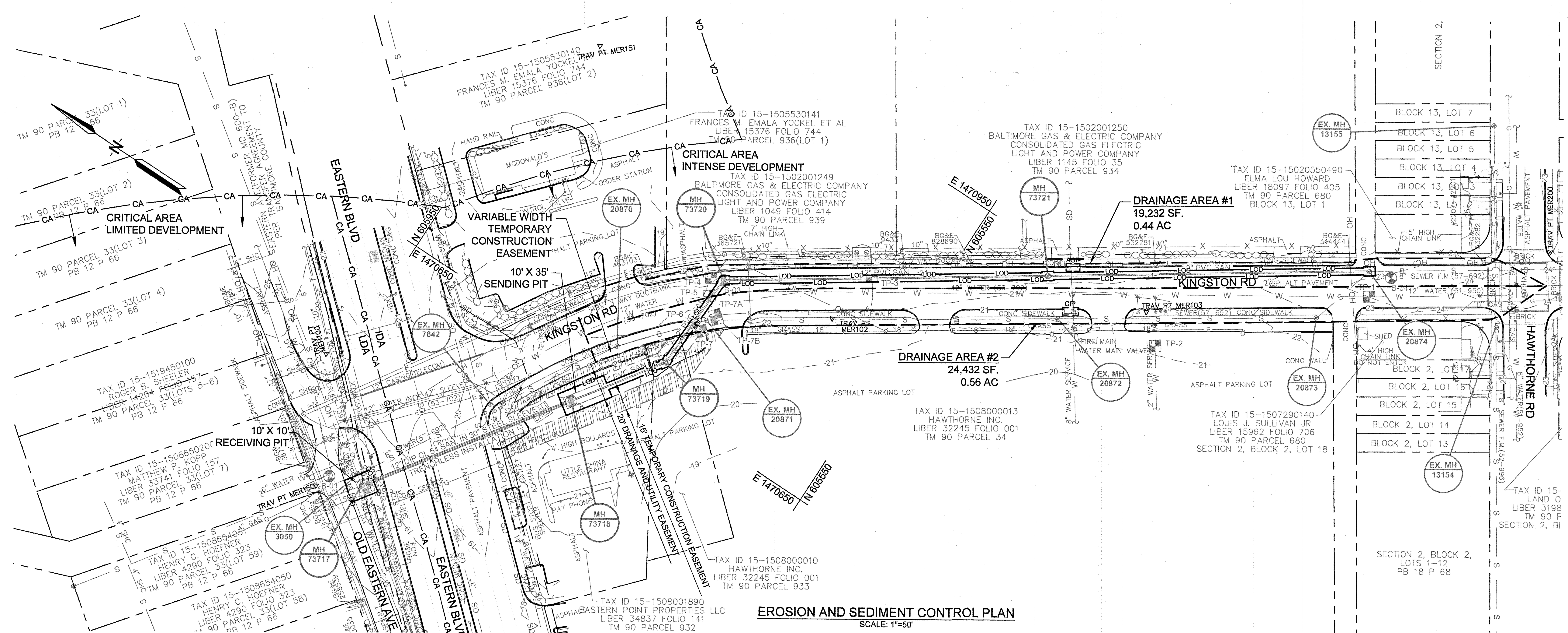
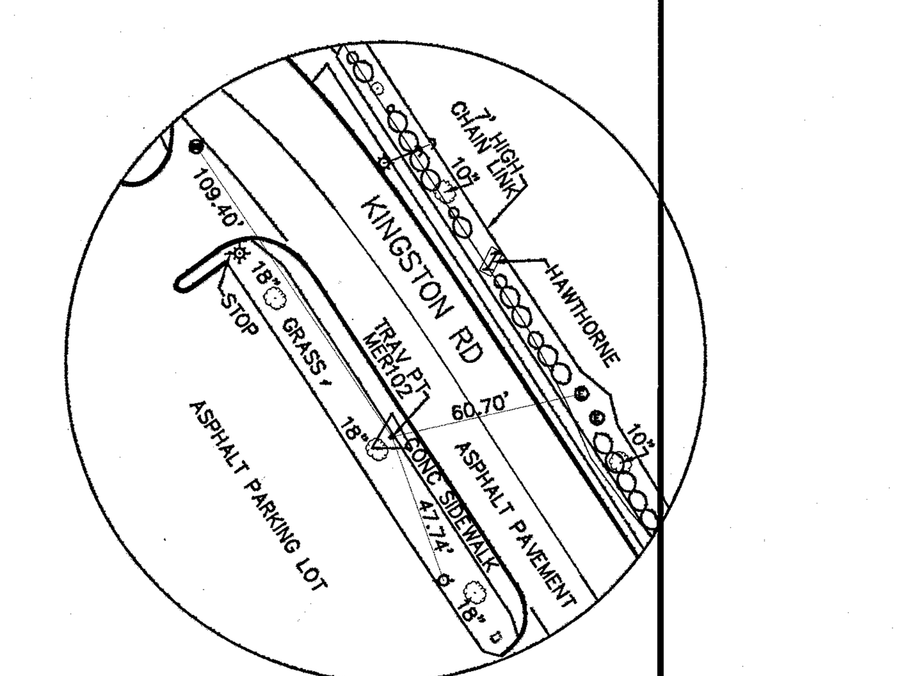
977	603036.64	1472779.70	17.99	CAPPED REBAR
1287	604797.19	1473071.69	16.00	CAPPED REBAR



EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=50'



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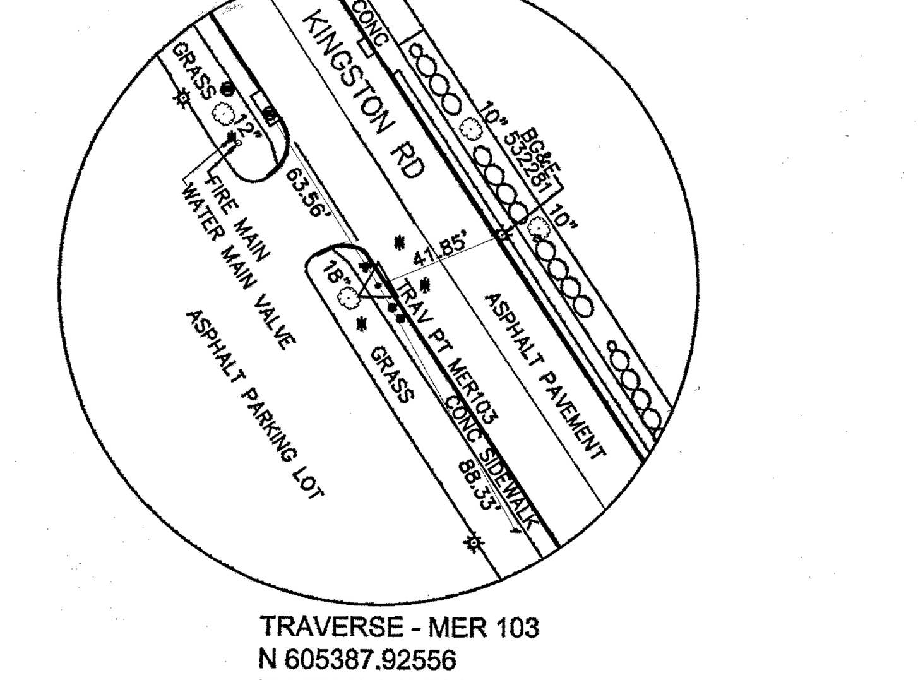

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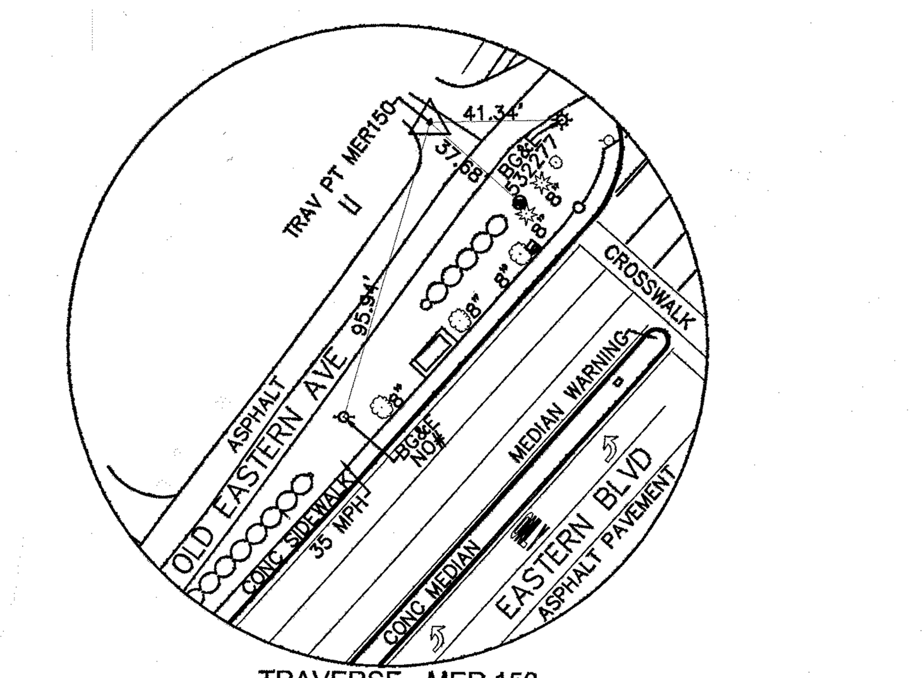

TRAVERSE - MER 150
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E 1470428.76180
EL 21.11

TRAVERSE POINTS

SCALE: NOT TO SCALE

SITE INFORMATION	
TOTAL AREA OF FACILITY	0.130 ACRES / 5671 SQ.FT.
AREA DISTURBED	0.130 ACRES / 5671 SQ.FT.
AREA TO BE ROOFED OR PAVED	0.112 ACRES / 4871 SQ.FT.
AREA TO BE VEGETATIVELY STABILIZED	0.018 ACRES / 800 SQ.FT.
TOTAL CUT	1047 CU.YD. *
TOTAL FILL	977 CU.YD. *

*FOR SEDIMENT AND EROSION CONTROL PURPOSES ONLY

SWEEPING NOTE:
ANY STONE OR SEDIMENT SPILLED, DROPPED OR TRACKED ONTO THE ADJACENT PARKING LOT AND/OR ROADWAY MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING AND/OR SWEEPING.

GRADING / EROSION AND SEDIMENT CONTROL LEGEND

- B-XX — SOIL BORING
- TP-XX — TEST PIT
- CIP — CURB INLET PROTECTION
- AGIP — AT GRADE INLET PROTECTION
- CA — CHESAPEAKE BAY CRITICAL AREA
- SF — SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- — — — DRAINAGE AREA BOUNDARY

OWNER'S/DEVELOPER'S CERTIFICATION - AIR QUALITY

I ACKNOWLEDGE THAT I AM RESPONSIBLE UNDER THE CODE OF MARYLAND REGULATIONS (26.11.06.03) TO PREVENT PARTICULATE MATTER FROM BECOMING AIRBORNE DUE TO GRADING, LAND CLEARING, EXCAVATION, CONSTRUCTION OR OTHER RELATED ACTIVITIES. I WILL CONTACT THE ENVIRONMENTAL HEALTH SECTION AT 410-887-4065 AT LEAST THREE DAYS PRIOR TO BEGINNING WORK.

[signature] DIR OF PUBLIC WORKS 4/14/2020
OWNER'S/DEVELOPER'S SIGNATURE — TITLE — DATE
STEVEN A. WALSH
PRINT NAME

OWNER'S/DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THIS CONSTRUCTION WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE ALSO CERTIFY THAT THE SITE WILL BE INSPECTED AT THE END OF EACH WORKING DAY, AND THAT ANY NEEDED MAINTENANCE WILL BE COMPLETED SO AS TO ENSURE THAT ALL SEDIMENT CONTROL PRACTICES ARE LEFT IN OPERATIONAL CONDITION. I/WE AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATIONS BY THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT BOARD OF SUPERVISORS OR THEIR AUTHORIZED AGENTS.

[signature] 4/14/2020
OWNER'S/DEVELOPER'S SIGNATURE — DATE
STEVEN A. WALSH — DIR OF PUBLIC WORKS
PRINT NAME — TITLE

CONSULTANT'S CERTIFICATION

I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT AND THE CURRENT STATE OF MARYLAND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN WITH THE OWNER/DEVELOPER.

[signature] 4/9/20
CONSULTANT'S SIGNATURE — DATE
JOHN A. BLONDELL — 200436
PRINT NAME — MD LICENSE NO.

EROSION AND SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
[signature] 5-5-20
DATE

DESIGN & DRAWINGS BASED ON MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

SEAL — DATE: 04/09/2020

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436, EXPIRATION DATE 09/30/2021.

ENGINEER: JOHN A. BLONDELL
KCI TECHNOLOGIES
936 Ridgebrook Road
Sparks, Maryland 21152.
Telephone: (410)316-7800
Fax: (410)316-7818

DGN BY: JAB — DWN BY: KFJ — CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT	DRAWING SCALE	
				N - SW	11 NE 33	PLAN SCALE:	1" = 50'-0"
			R.O.W NO.	N - NE	12 NE 34	PROFILE SCALE:	H:1" = 50'-0" V:1" = 5-0"

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER
REVIEWED BY:							
DATE REVIEWED:							

FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: ______ DIRECTOR
DATE: ______
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: ______ CHIEF
DATE: ______

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

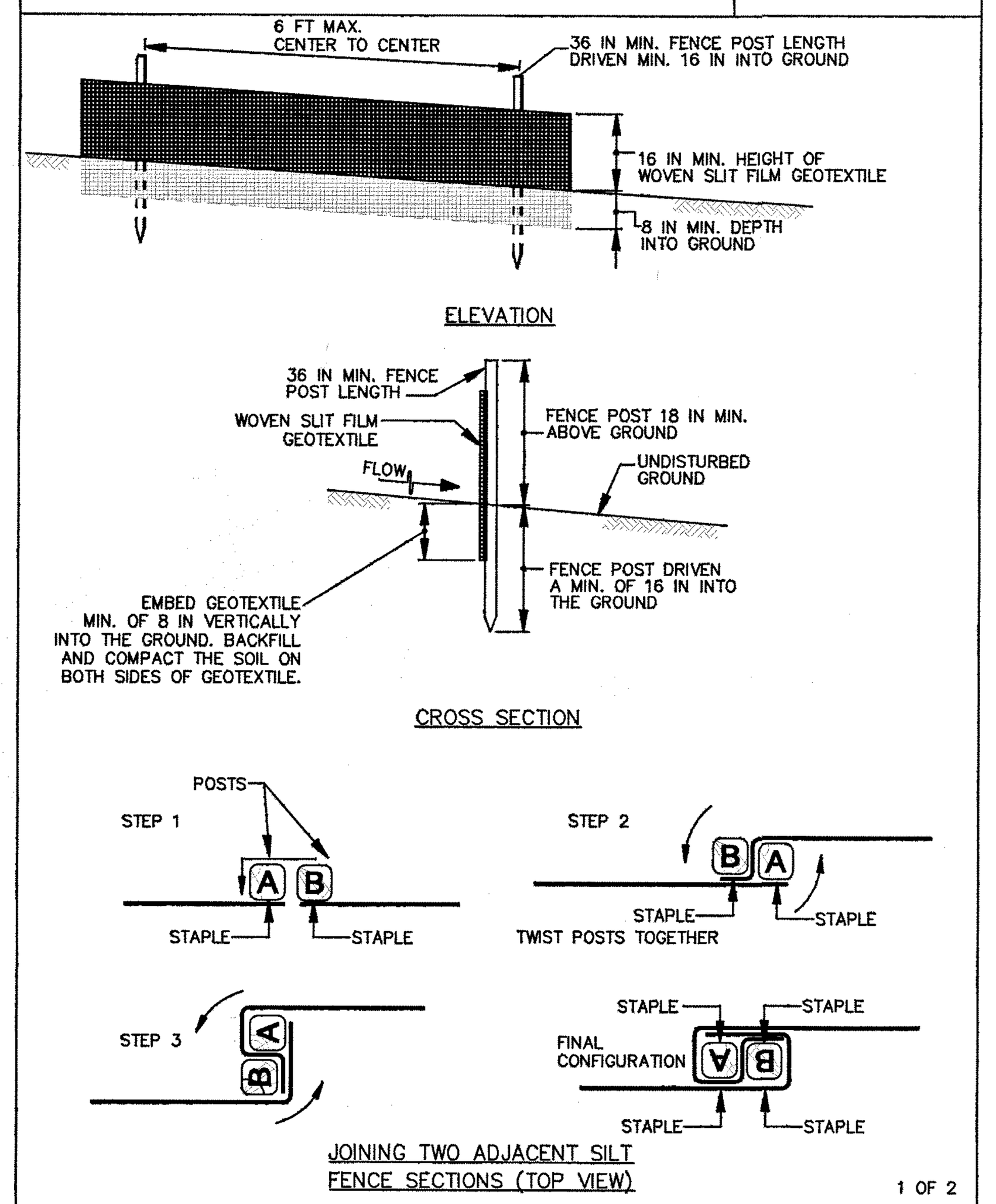
OREMS
BASIN 03 RELIEF SEWER
GRADING / EROSION AND SEDIMENT CONTROL PLAN

SUBDIVISION: HAWTHORNE — ELECTION DIST. NO.:15C6

SHEET DESIGNATION	CONTRACT NUMBER
ES-01	21144 SXO RE-BID
	JOB ORDER NUMBER
	231-201-0077-7240
	SHEET 3 OF 8
	DRAWING NUMBER
	2018 - 2453
	FILE NO.: 1

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ⊢—SF—⊣



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

E.2

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ⊢—SF—⊣

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

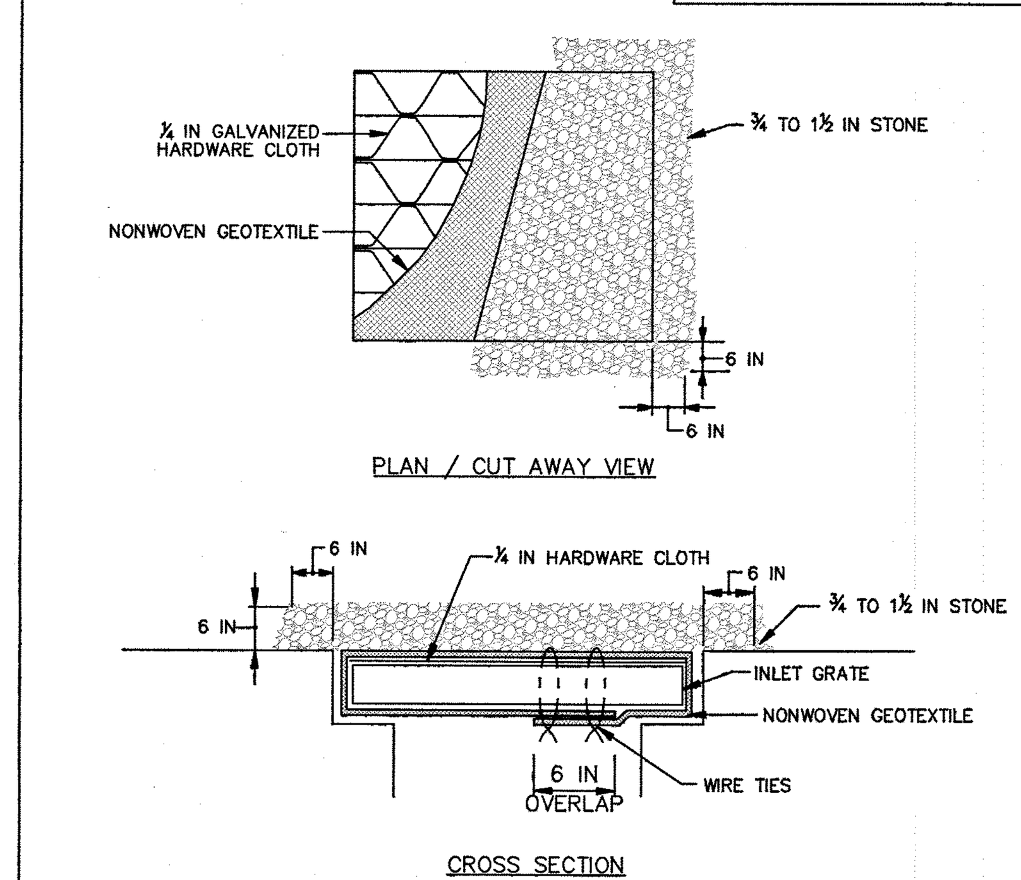
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

E.3

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

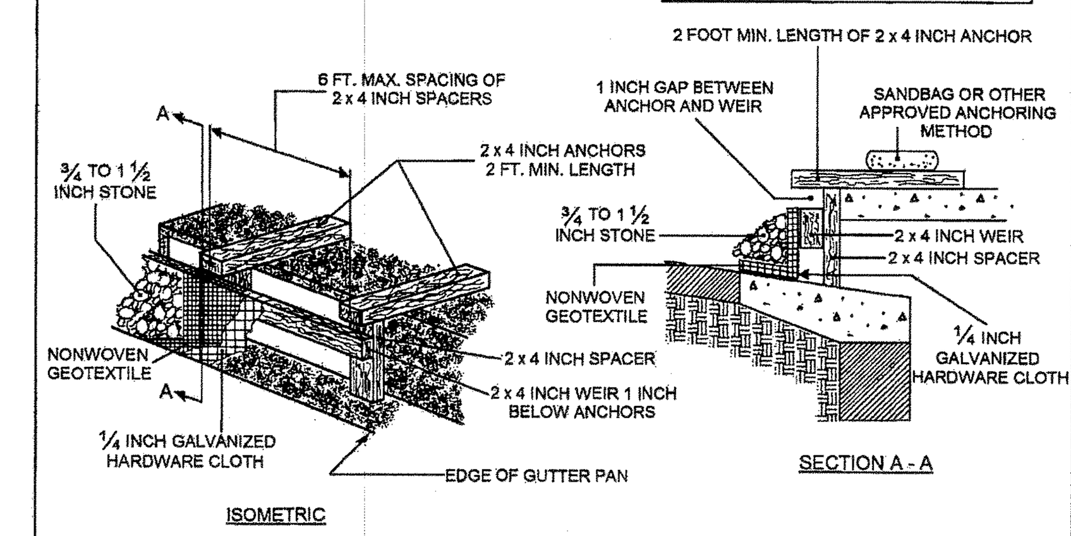
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

E.26

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = 1/4 ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 x 4 INCH LUMBER.
2. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, MINIMUM WIDTH OF 30 INCHES, AND MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2 x 4 INCH WEIR, EXTENDING 2 FEET BEYOND THE THROAT ON EACH SIDE.
3. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2 x 4 INCH WEIR.
4. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H - 1 MATERIALS.
5. NAIL THE 2 x 4 INCH WEIR (1 INCH BELOW THE ANCHORS) TO THE 9 INCH LONG VERTICAL SPACERS (MAX. 6 FEET APART).
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2 x 4 INCH ANCHORS (MIN. 2 FEET IN LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASHPALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN OR REPLACE THE GEOTEXTILE AND STONE.

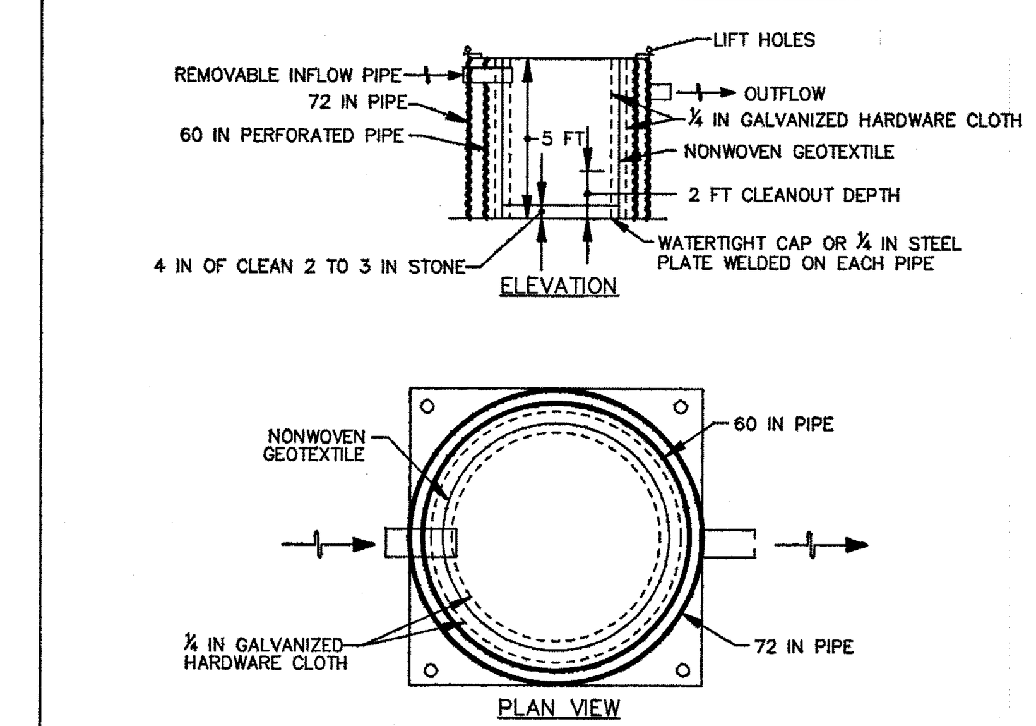
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
MODIFIED FOR USE IN BALTIMORE COUNTY

U.S DEPARTMENT OF AGRICULTURE NATURAL RESOURCE CONSERVATION SERVICE	MODIFIED - 2012	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

APPENDIX 22

DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: ☒PST



CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

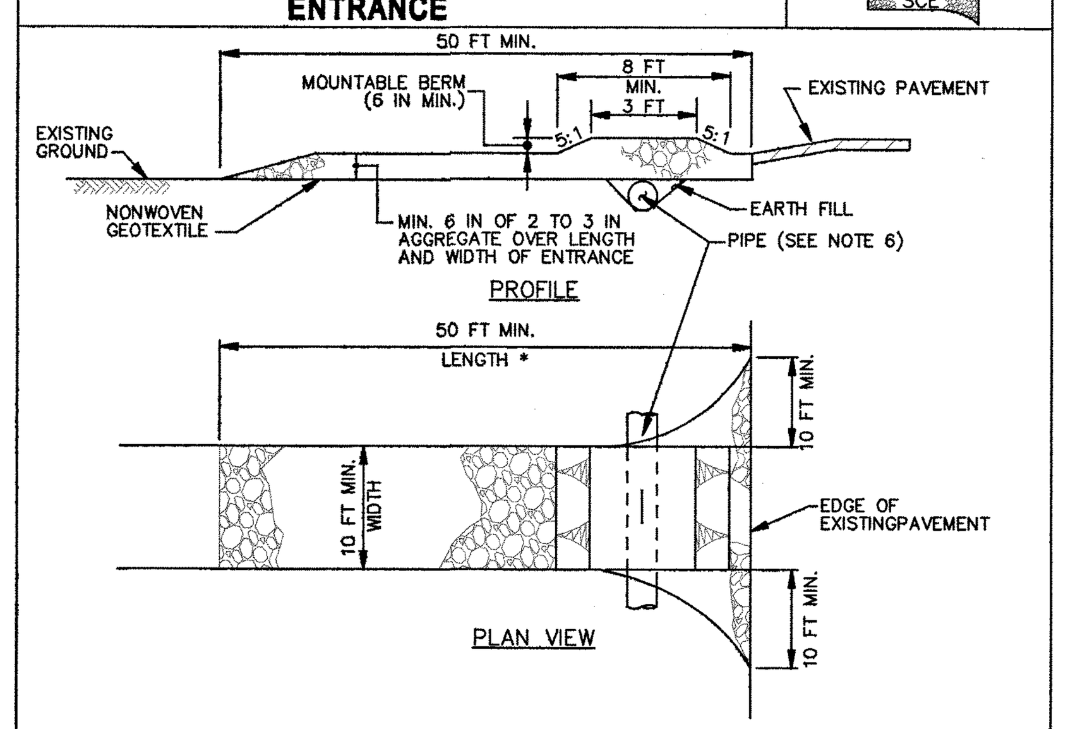
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

F.7

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B.2

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Definition

Controlling the suspension of dust particles from construction activities.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies

Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.
3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

H.22

H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS

Table H.1: Geotextile Fabrics

		WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MINIMUM AVERAGE ROLL VALUE[1]					
PROPERTY	TEST METHOD	MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		900 lb		450 lb	
Apparent Opening Size[2]	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec^{-1}		0.28 sec^{-1}		1.1 sec^{-1}	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

[1] All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

[2] Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

H.1

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
Jeffrey P. West 5-5-20
DATE

KCI TECHNOLOGIES PROJECT No.: 13144992.03

Apr 09, 2020 - 2:04pm User: kevin.jackson
M:\2014\13144992.03\Drawings\ES-02 EROSION AND SEDIMENT CONTROL DETAILS.dwg

DESIGN & DRAWINGS BASED ON
MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

SEAL — DATE: 04/09/2020

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436, EXPIRATION DATE 09/30/2021.

ENGINEER: JOHN A. BLONDELL
KCI TECHNOLOGIES
936 Ridgebrook Road
Sparks, Maryland 21152.
Telephone: (410)316–7800
Fax: (410)316–7818

DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS–BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT
				N - SW	11 NE 33
			R.O.W NO.	N - NE	12 NE 34

DRAWING SCALE — PLAN SCALE: ____ PROFILE SCALE: ____

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER

REVIEWED BY:
DATE REVIEWED:

FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: ____ DIRECTOR
DATE: ____
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: ____ CHIEF
DATE: ____

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
GRADING / EROSION AND SEDIMENT CONTROL DETAILS

SUBDIVISION: HAWTHORNE
ELECTION DIST. NO.:15C6

SHEET DESIGNATION: ES-02
CONTRACT NUMBER: 2144 SXO RE BID
JOB ORDER NUMBER: 231-201-0077-7240
SHEET 4 OF 8
DRAWING NUMBER: 2018 - 2454
FILE NO.: 1

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.

2. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE CONTROL OF ANY SEDIMENT. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT.

3. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.

4. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN: A.) THREE (3) CALENDAR DAYS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1), AND B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

5. ANY CHANGE TO THE GRADING PROPOSED ON THIS PLAN REQUIRES RE-SUBMISSION TO BALTIMORE COUNTY SOIL CONSERVATION DISTRICT FOR APPROVAL.

6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PG. H.22, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.

7. ANY VARIATIONS FROM THE SEQUENCE OF OPERATIONS STATED ON THIS PLAN REQUIRES THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT PRIOR TO THE INITIATION OF THE CHANGE.

8. EXCESS CUT OR BORROW MATERIAL SHALL GO TO, OR COME FROM, RESPECTIVELY, A SITE WITH AN OPEN GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN.

9. THE FOLLOWING ITEM MAY BE USED AS APPLICABLE: REFER TO "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION" BY THE WATER MANAGEMENT ADMINISTRATION (WMA) OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT DATED, NOVEMBER, 2000, FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN FOR WATERWAY CONSTRUCTION.

10. PUMPING SEDIMENT LADEN WATER INTO WATERS OF THE STATE IS STRICTLY PROHIBITED. ANY PORTABLE DEWATERING DEVICE MUST BE LOCATED WITHIN THE LIMIT OF DISTURBANCE.

PROJECT DESCRIPTION

THIS PROJECT IS A LINEAR UNDERGROUND SEWER INSTALLATION, CONSISTING OF 12-INCH SEWER MAIN FOR APPROXIMATELY 935 FEET WITHIN THE OREMS BASIN 03 SEWER SYSTEM.

EROSION AND SEDIMENT CONTROL NOTES

A. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. REFERENCE MANUALS INCLUDE: 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, MARYLAND GUIDELINES FOR WATERWAY CONSTRUCTION, DATE 2000, AND BALTIMORE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JANUARY 2000, AND BALTIMORE COUNTY STANDARD DETAILS FOR CONSTRUCTION DATED 2007.

B. THE CONTRACTOR SHALL NOT BEGIN CONSTRUCTION ON ANY INDIVIDUAL PARCEL OF LAND UNTIL BALTIMORE COUNTY HAS OBTAINED THE LEGAL RIGHTS FOR THAT PARCEL.

C. SEQUENCE OF CONSTRUCTION
   1. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS (DPAI, SC) (410-887-3226); AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
   2. IF APPLICABLE, ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF DISTURBANCE, WHERE THE LIMIT IS WITHIN 50 FEET OF THE CRITICAL AREA. THIS SHALL BE COMPLETED BY AND INSPECTED AT THE PRE-CONSTRUCTION MEETING.
   3. THE LIMIT OF DISTURBANCE (LOD) WILL BE CLEARLY DEFINED IN THE FIELD. THIS DEMARCATION SHALL BE INSPECTED AND APPROVED BY BALTIMORE COUNTY PAI AT THE PRE-CONSTRUCTION MEETING.
   4. CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF ALL SEDIMENT CONTROL MEASURES OR DEVICES.
   5. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES.
   6. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS, SEDIMENT CONTROL (DPAI, SC) UPON COMPLETION OF SAID INSTALLATION.
   7. WITH THE APPROVAL OF BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS, SEDIMENT CONTROL, AND THE SEDIMENT CONTROL INSPECTOR, BEGIN CONSTRUCTION.
   8. INSTALL SANITARY SEWER AND APPURTENANCES. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE UTILITY NOTES AND DAILY STABILIZATION NOTE ON THIS SHEET. SEE ALL OTHER NOTES/GUIDELINES ON PLAN VIEW SHEETS.
   9. UPON STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

D. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROPERLY MAINTAINED AND ADEQUATELY FUNCTIONING AT THE END OF EACH WORKDAY AND AFTER EVERY STORM EVENT. ANY EXISTING MEASURES THAT ARE DAMAGED SHALL BE PROPERLY REPAIRED AT THE END OF EACH WORKDAY. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO THE REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEED TO ENSURE PROPER FUNCTION.

E. EXCAVATED TOPSOIL AND SUBSOIL SHALL NOT BE ALLOWED TO BE STOCKPILED ON SITE.

F. POINT OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT THE TRACKING OF SOIL ONTO PUBLIC WAYS BY USING STABILIZED CONSTRUCTION ENTRANCE AT THE INTERFACES WITH PUBLIC ROADWAYS.

G. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   1. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1)
   2. SEVEN (7) CALENDAR DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

H. ANY DEWATERING DISCHARGE SHALL BE PLACED INTO AN APPROVED DEWATERING STRUCTURE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DETAILS.

INLET PROTECTION NOTE

THE CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS WITH THE EXCEPTION OF THE FOLLOWING:

*1. ANY INLET OUTFALLING DIRECTLY INTO A SEDIMENT TRAPPING DEVICE.
2. INLETS ON PRIVATE OR PUBLIC PAVED ROADWAYS OPEN TO THE PUBLIC.

ALL INLET PROTECTION WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PAGE E.23 (OR AS MAY BE AMENDED). THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

*STORM DRAINS TO BE FLUSHED PRIOR TO TRAPPING DEVICE REMOVAL.

UTILITY NOTES

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

SEDIMENT CONTROL TRAFFIC NOTE

ANY TRAVEL LANE CLOSED BEFORE 9:00 A.M. OR AFTER 3:30 P.M. MUST BE APPROVED BY BALTIMORE COUNTY BUREAU OF TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING AT 410-887-3554.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES AFTER EVERY STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO THE REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION.

DAILY STABILIZATION NOTE

THE CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:

1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   A. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
   B. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS THAT CANNOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE.

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B.9

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes
   1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
   2. Construction sequence example (Refer to Figure B.1):
      a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
      b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
      c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
      d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

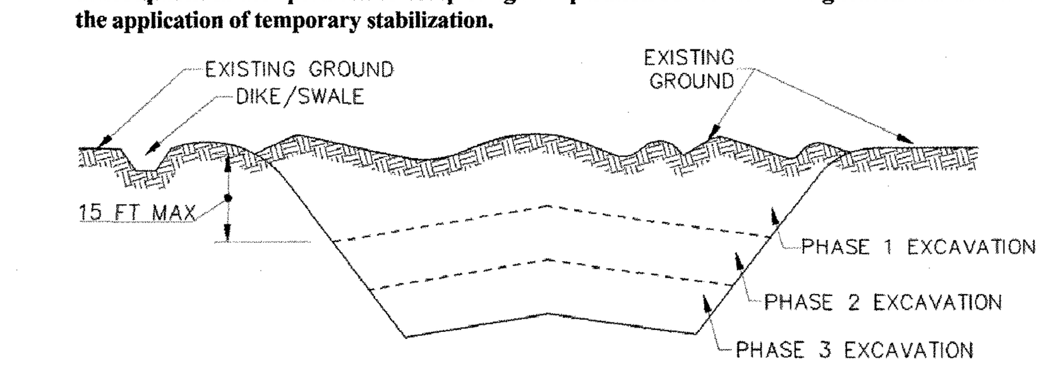


Figure B.1: Incremental Stabilization – Cut

B.10

B. Incremental Stabilization - Fill Slopes
   1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
   2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
   3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   4. Construction sequence example (Refer to Figure B.2):
      a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
      b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
      c. Place Phase 1 fill, prepare seedbed, and stabilize.
      d. Place Phase 2 fill, prepare seedbed, and stabilize.
      e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

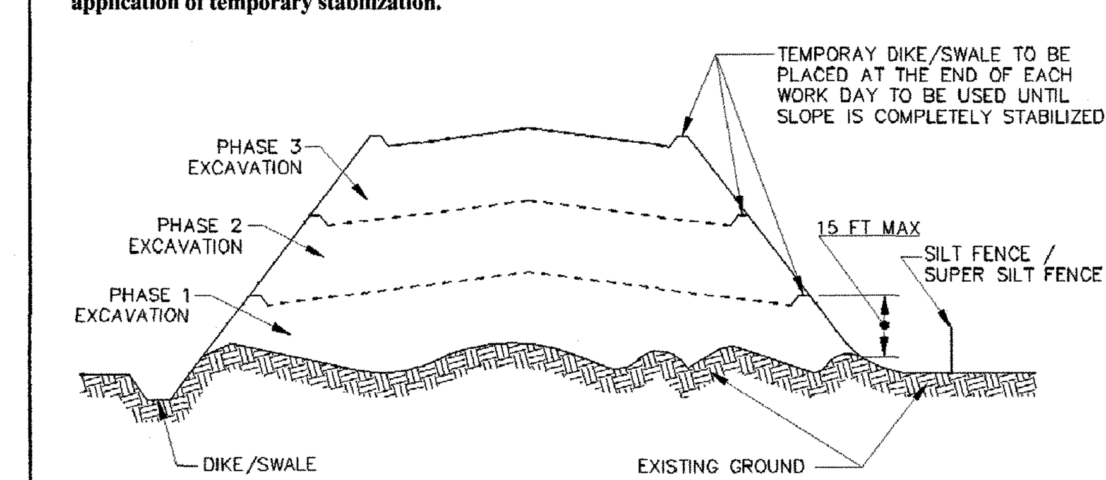


Figure B.2: Incremental Stabilization – Fill

B.11

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
5-5-20
DATE

DESIGN & DRAWINGS BASED ON
MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

KCI TECHNOLOGIES PROJECT No.: 13144992.03

Apr 09, 2020 - 2:04pm User: kevin.jackson
M:\2014\13144992.03\Drawings\ES-03 EROSION AND SEDIMENT CONTROL NOTES.dwg

SEAL

DATE : 04/09/2020

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436, EXPIRATION DATE 09/30/2021.

ENGINEER: JOHN A. BLONDELL
KCI TECHNOLOGIES
936 Ridgebrook Road
Sparks, Maryland 21152.
Telephone: (410)316-7800
Fax: (410)316-7818

DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT	DRAWING SCALE	
				N - SW	11 NE 33 12 NE 34	PLAN SCALE:	
			R.O.W NO.	N - NE		PROFILE SCALE:	

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER
REVIEWED BY:	FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451						
DATE REVIEWED:							

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: ______ DIRECTOR
DATE: ______
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: ______ CHIEF
DATE: ______

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
GRADING / EROSION AND SEDIMENT CONTROL NOTES

SUBDIVISION: HAWTHORNE

ELECTION DIST. NO.:15C6

SHEET DESIGNATION	CONTRACT NUMBER
ES-03	211 44 SXO RE BID
	JOB ORDER NUMBER
	231-201-0077-7240
	SHEET 5 OF 8
	DRAWING NUMBER
	2018 - 2455
	FILE NO.: 1 REV. 01/09

KCI TECHNOLOGIES PROJECT No.: 13144992.03

SECTION 329201X SEEDING

Include MAA Landscaping Reference "Approved Installation Methods" in the Contract Documents when using this specification.

PART 1 – GENERAL

1.1 GENERAL. This item provides specifications for seeding of areas as designated on the Contract Drawings or as directed by the MAA Engineer. The species, mixtures, and methods of application provided in this item have been designed to reduce the attractiveness of airport grounds to wildlife. Only MAA-approved species, mixtures, and rates of application provided in this item may be used to establish vegetation. All activities associated with seeding including soil preparation, seed application, fertilization, and maintenance shall also conform to these approved standards.

PART 2 – PRODUCTS

2.1 SEED. All seed shall comply with the Maryland Seed Law (Agricultural Article of the Annotated Code of Maryland). Only MAA-approved species, mixtures, and rates of application provided in this item may be used to establish vegetation. Seed will be sampled and tested by an inspector from the Turf and Seed Section, Maryland Department of Agriculture (MDA), Annapolis, Maryland. All lawn and turf seed and mixtures shall be free from the following state-listed restricted noxious weeds:

Corn Cockle (*Agrostemma githago*),
Bentgrass (*Agrostis* spp.)[1],
Redtop (*Agrostis gigantea*) [1]
Wild Onion (*Allium canadense*),
Wild Garlic (*Allium vineale*),
Bindweed (*Calstegia* spp.),
Dodder (*Cuscuta* spp.),
Bermuda Grass (*Cynodon dactylon*),
Orchardgrass (*Dactylis glomerata*),
Tall Fescue (*Festuca arundinacea*) [1]
Meadow Fescue (*Festuca pratensis*) [1],
Velvetgrass (*Holcus lanatus*),
Annual Bluegrass (*Poa annua*),
Rough Bluegrass (*Poa trivialis*)[1],
Timothy (*Phleum pratense*), and
Johnson Grass (*Sorgum halepense*).

Restricted noxious-weed seed may not exceed 0.5 percent by weight of any seed mixture. In addition, all seeds shall be free from the following listed prohibited noxious weeds:

[1] These species may be included as a labeled component of a mixture when each is present in excess of five percent of the mixture by weight.

Balloonvine (*Cardiospermum halicacabum*), Quackgrass (*Elytrigia repens*), Sicklepod (*Senna obtusifolia*), Sorghum (*Sorghum* spp.), Canada Thistle (*Cirsium arvense*), Plumeless Thistle (*Carduus* spp.-includes musk thistle and curled thistle), and Serrated Tussock (*Nassella trichotoma*).

A. APPROVED SPECIES. The following table contains species that are approved by MAA for use in seed mixtures. Purity requirements and germination requirements are also provided.

APPROVED PLANT SPECIES
MAA SEED MIXTURES

	Purity[a] Not Less than %	Minimum % Germination[b]	Pure Live Seed Factor
Certified Turf-Type Tall Fescue (*Festuca arundinacea*)	98	90	1.13
Certified Kentucky Bluegrass (*Poa pratensis*)	90	80	1.39
Fowl Bluegrass (*Poa palustris*)	90	80	1.39
Hard Fescue (*Festuca longifolia*)	98	90	1.13
Chewings Red Fescue (*Festuca rubra commutata*)	98	90	1.13
Annual Ryegrass (*Lolium multiflorum*)	95	85	1.24
Perennial Ryegrass (*Lolium perenne*)	90	80	1.39
Creeping Bentgrass (*Agrostis stolonifera*)	90	80	1.39
Switchgrass (*Panicum virgatum*)	90	80	1.39
Little Bluestem (*Andropogon scoparius*)	62	94	1.71

[a] The percentage weight of pure seed present shall be free of any agriculture seeds, inert matter, and other seeds distinguishable by their appearance.
[b] The percentage of germination shall be actual sprouts and shall not include hard seeds unless specifically permitted by the MAA Engineer.

B. PURITY. All seed shall be free of all state-designated noxious weeds listed in Paragraph 2.1.1 and conform to MAA specifications. To ensure compliance, MAA requires sampling and testing of seed by the Turf and Seed Section, Maryland Department of Agriculture (MDA). The Contractor shall furnish the MAA Engineer with duplicate signed copies of a statement by the Turf and Seed Section certifying that each lot of seed has been laboratory tested within six months of date of delivery. This statement shall include the following information:

- Name and address of laboratory,

- Date of test,
- Lot number,
- The results of tests as to name, percentages of purity and of germination,
- Percentage of weed content for the seed furnished,
- and, in the case of a mixture, the proportions of each kind of seed.

Seed shall be furnished in standard containers with the seed name, lot number, net weight, percentages of purity, germination rate and hard seed, and percentage of maximum weed seed content clearly marked. All seed containers shall be tagged with a MDA supervised mix program seed tag.

C. MIXTURES AND APPLICATION RATES. Only seed mixtures and application rates described in this item may be used unless otherwise approved by the MAA Engineer. Seed mixtures shall meet criteria detailed in Paragraph 903-2.1.2. Seed mixtures have been formulated to minimize the attractiveness of areas to wildlife of common landscape scenarios. The appropriate seed mixture for application will be designated based on environmental conditions and may vary from site to site. All planting rates listed are in pounds of Pure Live Seed (PLS) per acre.

Seed mixtures, application scenarios, and rates *for permanent cool-season grasses* are as follows:

a. Seed Mixture No. 1 - relatively flat areas (grade less than 4:1) subject to normal conditions and regular mowing (Application rate = 234 lbs PLS/acre);
b. Seed Mixture No. 2 - sloped areas (grade greater than 4:1) not subject to regular mowing (Application rate = 115 lbs PLS/acre); and
c. Seed Mixture No. 3 - wetlands and their associated buffer zones (Application rate = 131 lbs PLS/acre).

Seed Mixture No. 1: Relatively flat areas regularly mowed and exposed to normal conditions (Application rate = 234 lbs PLS/acre)

Seed	Rate of Application (lbs of PLS/acre)
85% Certified Turf-Type Tall Fescue	192
10% Certified Kentucky Bluegrass	28
5% Perennial Ryegrass	14
Supplemental Seed	
Annual Ryegrass	25

Seed Mixture No. 2: Sloped areas not subject to regular mowing (Application rate = 115 lbs PLS/acre)

Seed	Rate of Application (lbs of PLS/acre)
75% Hard Fescue	85
20% Chewings Fescue	23
5% Kentucky Bluegrass	7
Supplemental Seed	
Redtop	3

Seed Mixture No. 3 - Wetland areas and their associated buffer zones (Application rate = 131 lbs PLS/acre)

Seed	Rate of Application (lbs of PLS/acre)
60% Creeping Bent Grass	83
30% Fowl Bluegrass	34
10% Switchgrass	14
Supplemental Seed	
Redtop	3

D. SEEDING SEASONS. Application of seed and seed mixtures shall occur within a specified seeding season unless otherwise approved by the MAA Engineer. No seed or seed mixtures are to be applied on frozen ground or when the temperature is at or below 35 degrees Fahrenheit (7.2 degrees Centigrade). Under these conditions, a layer of mulch should be applied in accordance with Item 905, Mulching, to stabilize the site, and permanent seeding should occur in the subsequent seeding season. Seed application may occur during the seeding season dates listed below. Seeding performed after October 20 should be a temporary cover of annual ryegrass and followed by overseeding of the appropriate seed mixture during the spring seeding season.

SEEDING SEASONS	
Permanent Cool-Season Grasses	March 1 to April 20 and August 1 to October 20, inclusive
Temporary Cover of Annual Rye/Redtop	March 1 to April 30 and August 1 to November 30, inclusive
Temporary Cover of Warm-Season Grasses *(Little Bluestem only)*	May 1 to July 31, inclusive. Rate of application should be 13.6 lbs. PLS per acre.

Seeding seasons are based on typical years and can be subject to variation, which may be modified by the MAA Engineer based on seasonal trends.

If the time required to complete any of the operations necessary under this item, within the specified planting season or any authorized extensions thereof, extends beyond the Contract period, then such time will be charged against the Contract time, and liquidated damages will be enforced with respect to this portion of work.

2.2 LIME. Lime shall consist of ground limestone and contain at least 85 percent total carbonates. Lime shall be ground to a fineness so that at least 90 percent will pass through a No. 20 mesh sieve and 50 percent will pass through a No. 100 mesh sieve. Dolomitic lime or a high magnesium lime shall contain at least 10 percent magnesium oxide. Lime shall be applied by approved methods detailed in Section 903-3.3 of this item. The rate of application will be based on results of soil tests.

2.3 FERTILIZER.

Section 2.3 is reproduced verbatim from the Maryland Department of Agriculture's Fertilizer Law page.

Fertilizer shall be standard commercial fertilizer (supplied separately or in mixtures) and meet the requirements of applicable state and federal laws (O-F-241) as well as standards of the Association of Official Agricultural Chemists. Nitrogen-Phosphorus-Potassium (N-P-K) concentrations shall be determined from analysis of soil samples. Methods of fertilizer application shall conform to standards described in Section 903-3.3 of this item. Fertilizer shall be furnished in standard containers that are clearly labeled with name, weight, and guaranteed analysis of the contents (percentage of total nitrogen, available phosphoric acid, and water-soluble potash). Mixed fertilizers shall not contain any hydrated lime or cyanamide compounds. Fertilizers failing to meet the specified analysis may be approved by the MAA Engineer, providing sufficient materials are applied to conform with the specified nutrients per unit of measure without additional cost to MAA.

The fertilizers may be supplied in the following forms:

a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;

b. A finely ground fertilizer soluble in water, suitable for application by power sprayers; or

c. A granular or pellet form suitable for application by blower equipment.

The rate of application will be based on results of soil tests performed by the University of Maryland Soil Testing Laboratory. By law, persons applying fertilizer to State-owned land shall follow the recommendations of the University of Maryland as set forth in the "Plant Nutrient Recommendations Based on Soil Tests for Turf Maintenance" and the "Plant Nutrient Recommendations Based on Soil Tests for Sod Production" (see attached Reference, "Approved Installation Methods"). Application of the fertilizer shall be in a manner that is consistent with the recommendations of the University of Maryland Cooperative Extension.

Per Maryland's Lawn Fertilizer law, which took effect October 1, 2013, lawn care professionals hired to apply fertilizer to lawns must be certified by MDA or work under the direct supervision of an individual who is certified. The following fertilizer restrictions apply:

FERTILIZER RESTRICTIONS

- Everyone must follow University of Maryland fertilizer recommendations.
- A single fertilizer application may not exceed 0.9 pound total nitrogen per 1,000 sq ft which can include no more than 0.7 pound of soluble nitrogen per 1,000 sq ft.
- Visit extension.umd.edu/hgic for seasonal and yearly nitrogen recommendations.
- Lawn care pros should consult the Maryland Professional Lawn Care Manual.
- Phosphorus may only be applied when a soil test indicates that it is needed or when a lawn is being established, patched or renovated.
- Fertilizer may not be used to de-ice walkways and driveways.
- It is against the law to apply fertilizer to sidewalks or other impervious surfaces. Fertilizer that lands on these surfaces must be swept back onto the grass or cleaned up.
- No fertilizer applications within 10 to 15 feet of waterways.
- Do not fertilize lawns if heavy rain is predicted or the ground is frozen.
- Do not apply lawn fertilizer between November 15 and March 1.
- Enhanced efficiency controlled release products may be applied at no more than 2.5 pounds per year, with a maximum monthly release rate of 0.7 pound of N per 1,000 sq ft.

FOR LAWN CARE PROFESSIONALS ONLY

- From November 16 through December 1 only water soluble nitrogen may be applied to lawns at a maximum rate of 0.5 pound per 1,000 sq ft.
- Natural organic or organic products containing phosphorus may not exceed 0.25 pound of phosphorus per 1,000 sq ft with an annual maximum of 0.5 pound of phosphorus per 1,000 sq ft. These products may not be applied when soils test at "optimum to excessive" for phosphorus levels.

PART 3 – EXECUTION

3.1 GENERAL. This section provides approved methods for the application of and includes standards for seedbed preparation, methods of application, and equipment to be used during the process. Lime and fertilizer shall be applied to seeded areas before the seed is spread. The mixture of seed will be determined for sites based on environmental conditions as described in Paragraph 2.1.C.

3.2 ADVANCE PREPARATION. Areas designated for seeding shall be properly prepared in advance of seed application. The area shall be tilled and graded prior to application of lime and fertilizer, and the surface area shall be cleared of any stones larger than 1 inch in diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. Damage caused by erosion or other forces that occur after the completion of grading shall be repaired prior to the application of fertilizer and lime. The Contractor will repair such damage, which may include filling gullies, smoothing irregularities, and repairing other incidental damage before beginning the application of fertilizer and ground limestone.

If an area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, all grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory condition by discing or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

An area to be seeded shall be considered a satisfactory seedbed (without requiring additional treatment) if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches; the top 3 inches of soil is loose, friable, and is reasonably free from large clods, rocks, large roots, or other undesirable matter; appropriate amounts of fertilizer and lime have been added; and, if it has been shaped to the required grade immediately prior to seeding. For slope areas steeper than 3:1 (three horizontal to one vertical), the subsoil shall be loose to a depth of 1 inch.

After completion of tilling and grading, lime and fertilizer shall be applied within 48 hours according to the specified rate (Paragraphs 2.2 2.3) and methods (Paragraphs 3.3.A and 3.3.B) approved by MAA. The seeding mixture shall be applied within 48 hours after application of lime and fertilizer. To firm the seeded areas, cultipacking shall occur immediately after seeding.

3.3 METHODS OF APPLICATION. Lime, fertilizer, and seed mixes shall be applied by either the dry or wet application methods that have been approved by MAA and are detailed below.

A. DRY APPLICATION METHOD

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
Jeffrey P. West 5-5-20
DATE

DESIGN & DRAWINGS BASED ON
MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

SEAL — STATE OF MARYLAND, AMBROSE, No. 20043, REGISTERED PROFESSIONAL ENGINEER
DATE: 04/09/2020

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436, EXPIRATION DATE 09/30/2021.

ENGINEER: JOHN A. BLONDELL
KCI TECHNOLOGIES
936 Ridgebrook Road
Sparks, Maryland 21152.
Telephone: (410)316-7800
Fax: (410)316-7818

DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT
				N - SW	11 NE 33
			R.O.W NO.	N - NE	12 NE 34

BUREAU OF ENGINEERING AND CONSTRUCTION | BUILDINGS | HIGHWAYS | STRUCTURES | STORM DRAINS | SEWER | WATER | FIELD ENGINEER

REVIEWED BY:
DATE REVIEWED:
FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451

DRAWING SCALE
PLAN SCALE:
PROFILE SCALE:

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: DIRECTOR
DATE:
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: CHIEF
DATE:

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
GRADING / EROSION AND SEDIMENT CONTROL NOTES

SUBDIVISION: HAWTHORNE
ELECTION DIST. NO.:15C6

SHEET DESIGNATION: ES-04
CONTRACT NUMBER: 21144 SXO REBID
JOB ORDER NUMBER: 231-201-0077-7240
SHEET 6 OF 8
DRAWING NUMBER: 2018 - 2456
FILE NO.: 1

Apr 09, 2020 - 2:05pm User: kevin.jackson
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a. Liming. If soil test results indicate that lime is needed, the following procedures will be used: following advance preparation of the seedbed, lime shall be applied prior to the application of any fertilizer or seed and only on seedbeds that have been prepared as described in paragraph 903-3.2. The lime shall be uniformly spread and worked into the top 2 inches of soil, after which the seedbed shall be properly graded again.

b. Fertilizing. Following advance preparations (and liming if necessary), fertilizer shall be spread uniformly at the specified rate to provide no less than the minimum quantity stated in Paragraph 903-2.3.

c. Seeding. Seed mixtures shall be sown immediately after fertilization of the seedbed. The fertilizer and seed shall be lightly raked to a depth of 1 inch for newly graded and disturbed areas.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted using a cultipacker or an approved lawnroller.

B. WET APPLICATION METHOD/HYDROSEEDING

a. General. The Contractor may elect to apply seed and fertilizer as per Paragraphs c and d of this section in the form of an aqueous mixture by spraying over the previously prepared seedbed using methods and equipment approved by MAA. The rates of application shall be as specified in Paragraphs 2.1 through 2.3.

b. Spraying Equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge capable of reading increments of 50 gallons or less over the entire range of the tank capacity. The liquid level gauge shall be mounted so as to be visible to the nozzle operator at all times. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The spraying equipment shall also include a pressure pump capable of delivering 100 gallons per minute at a pressure of 100 pounds per square inch. The pressure pump assemblage shall be configured to allow the mixture to flow through the tank when not being sprayed from the nozzle. All pump passages and pipelines shall be capable of providing clearance for 5/8-inch solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. A pressure gauge shall be connected to and mounted immediately behind the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture to be supplied so that mixtures may be properly sprayed over a distance varying

from 20 feet to 100 feet. One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For ease of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings. In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime shall be applied separately in the quantity specified, prior to the fertilizing and seeding operations. Lime should be added to and mixed with water at a concentration not to exceed 220 pounds of lime for every 100 gallons of water. After lime has been applied, the tank should be emptied and rinsed with fresh water. Seed and fertilizer shall be mixed together in the relative proportions specified, but the resulting concentration should not exceed 220 pounds of mixture per 100 gallons of water and should be applied within 30 minutes to prevent fertilizer burn of the seeds.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify all sources of water to the MAA Engineer at least two weeks prior to use. The Engineer may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 30 minutes from the time they were mixed or they shall be wasted and disposed of at a location acceptable to the Engineer.

d. Spraying. Lime shall be sprayed upon previously prepared seedbeds on which the lime, if required, shall have been worked in already. The mixtures shall be applied using a high-pressure spray which shall always be directed upward into the air so that the mixtures will fall to the ground in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner that might produce erosion or runoff. Particular care shall be exercised to ensure that the application is made uniformly, at the prescribed rate, and to guard against misses and overlapped areas. Predetermined quantities of the mixture shall be used in accordance with specifications to cover specified sections of known areas. To checks the rate and uniformity of application, the applicator will observe the degree of wetting of the ground or distribute test sheets of paper or pans over the area at intervals and observe the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the MAA Engineer, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

3.4 MAINTENANCE OF SEEDED AREAS. The contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Engineer. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work performed out of season, the Contractor will be required to establish a good stand of grass of uniform color and density to the satisfaction of the Engineer. If at the time when the contract has been otherwise completed it is not possible to make an adequate determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted portions of the areas seeded out of season will be withheld until such time as these requirements have been met.

PART 4 – METHOD OF MEASUREMENT

4.1 The quantity of seeding to be paid for shall be the numbers of acres (or square yard) or portions thereof, measured on the ground surface, completed, and accepted. Separate measurements will be made of the areas seeded with the several seed mixtures specified. No distinction will be made between "graded" areas and "undisturbed" areas in arriving at the total acreage (or square yard) for each area seeded with specified seed mixes. No separate measurements will be made of graded and undisturbed areas for purposes of separate payments.

PART 5 – BASIS OF PAYMENT

5.1 The quantity, determined as provided above, will be paid for at the contract unit price per acre (or square yard), or fraction thereof, for seeding, which price and payment shall be full compensation for furnishing and placing all material, including fertilizers, liming if needed, and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

329201X.1	Seeding Mixture No. 1 – per acre
329201X.2	Seeding Mixture No. 1 – per square yard
329201X.3	Seeding Mixture No. 2 – per acre
329201X.4	Seeding Mixture No. 2 – per square yard
329201X.5	Seeding Mixture No. 3 – per acre
329201X.6	Seeding Mixture No. 3 – per square yard
329201X.7	Amendments – per acre
329201X.8	Amendments – per square yard
329201X.9	Fertilizer – per acre

329201X.10	Fertilizer – per square yard

END OF SECTION 329201X

SECTION 329202X SODDING

PART 1 – GENERAL

1.1 DESCRIPTION

This item provides standards for furnishing, hauling, and placing approved live sod on prepared areas as indicated on site plans. Sod will only be applied to landscape areas and shall be mowed frequently. All sodding activities shall conform to these specifications at the locations shown on site plans or as directed by the MAA Engineer.

PART 2 - PRODUCTS

2.1 SOD. Sod furnished by the Contractor shall have a good cover of living or growing grass. This includes grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas in which the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials that might be detrimental to the development of the sod or to future maintenance. Grass sod shall be Maryland-certified or approved and shall comply with the Maryland Sod Law of the Annotated Code of Maryland (Agricultural Article Sections 9-101 through 9-110). Each load of sod shall bear a Maryland State Approved or Certified label at the time of delivery on the job. Sod shall be either: (1) Bluegrass sod containing not less than 80 percent Kentucky bluegrass (*Poa pratensis*) and not more than 20 percent Red Fescue (*Festuca rubra*); or (2) certified turf type-tall fescue (*Festuca arundinacea*) sod containing not less than 80 percent certified turf type-tall fescue (*Festuca arundinacea*) grass and not more than 20 percent Kentucky Bluegrass (*Poa pratensis*) and Red Fescue (*Festuca rubra*). Any vegetation more than 6 inches in height shall be mowed to a height of 3 inches or less before sod is lifted. Sod, including the soil containing the roots and the emergent plant growth, shall be cut uniformly to a thickness not less than that specified in Section 904-3.4.

2.2 LIME. Lime shall conform to standards described in Section 903, "Seeding."

2.3 FERTILIZER. Fertilizers and application methods shall conform to the standards previously described in Section 903, "Seeding."

2.4 WATER. All water shall conform to the standards previously described in Paragraph 902-2.4, "Water."

2.5 SOILS FOR REPAIR. All soils for repairs shall conform to the standards previously described in Paragraph 901-2.3, "Soils for Repair."

PART 3 – EXECUTION

3.1 GENERAL. Areas to be sodded shall be clearly indicated by site plans. Areas requiring special ground surface preparation, such as tilling, and those areas in a satisfactory condition that are to remain undisturbed shall also be shown on the plans.

Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, and shall be approved by the MAA Engineer before sodding operations begin. The Contractor shall demonstrate to the MAA Engineer, before starting the various operations, that the application of required materials, such as fertilizer and limestone, will be made at the specified rates.

3.2 ADVANCE PREPARATION. If the area to be sodded is sparsely vegetated, weedy, barren and unworked, or packed and hard, all existing herbaceous vegetation shall be removed. The soil shall then be scarified or otherwise loosened to a depth of at least 5 inches (125 mm). Clods shall be pulverized, and the top 3 inches (75 mm) of soil shall be worked into a satisfactory bed by discing or use of cultipackers, rollers, drags, harrows, or other equipment approved by the MAA Engineer. The area shall then be properly graded as indicated by site plans.

After grading of areas is complete and prior to the application of fertilizer and limestone, areas to be sodded shall be raked or otherwise cleared of stones larger than 1 inch in diameter, sticks, stumps, and other debris which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after grading of areas and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be sodded will be considered a satisfactory seedbed without requiring additional treatment if it recently has been thoroughly loosened and worked to a depth of at least 5 inches as a result of grading operations and, if immediately prior to sodding, the top 3 inches of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and is shaped to the required grade. For slope areas steeper than 3:1 (three horizontal to one vertical) the subsoil shall be loosened to a depth of 1 inch. Lime and fertilizer shall be applied within 48 hours after tilling as described in 903-3.3 and 3.4. The sod shall be applied immediately after the lime and fertilizer have been worked into the soil.

3.3 APPLICATION OF FERTILIZER AND LIME. Following ground surface preparation, fertilizer shall be uniformly spread as described in Section 903-3.3 at a rate that will provide at least the minimum quantity of fertilizer required. If the use of ground limestone is specified, it shall be spread as described in Section 903-3.3, "Methods of Application"; at a rate that will provide at least the minimum quantity of lime required. These materials shall be incorporated into the soil to a depth of at least 2 inches by discing, raking, or other methods approved by the MAA Engineer. Any stones larger than

1 inch in diameter, large clods, roots, and other litter brought to the surface by this operation shall be removed.

3.4 OBTAINING AND DELIVERING SOD. The sod shall be well rooted, grown in the State of Maryland, and field grown for a minimum of 12 months. After inspection and approval of the sod by the MAA Engineer, the sod shall be cut with approved sod cutters to such a thickness that after placement on the prepared bed, but before compaction, it shall have a uniform attached soil thickness of at least 0.75 inch. Sod sections or strips shall be cut in uniform widths of at least 14 inches and in lengths of at least 18 inches, but not to lengths that might inhibit placement without breaking, tearing, or loss of soil. Where strips are required, the sod shall be rolled or folded undamaged, with the grass facing inward. The Contractor may be required to mow high grass before cutting sod.

Sod shall be transplanted within 24 hours from the time of harvest unless circumstances beyond the Contractor's control make storage necessary. In such cases, sod shall be stacked, kept moist, protected from exposure to the air and sun, and shall be kept from freezing. Sod shall only be harvested and moved when soil moisture conditions are such that favorable results can be expected. Where soil is too dry, permission to cut sod may be granted only after it has been sufficiently watered to moisten the soil to the depth at which the sod will be cut.

3.5 PLACING SOD. Sodding shall only be performed during seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the MAA Engineer, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches immediately prior to laying the sod.

The sod shall be moist and shall be placed on a bed, prepared according to Paragraphs 904-3.2 "Advance Preparation", and 904-3.3, "Application of Fertilizer and Lime" by hand. Pitchforks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be placed carefully by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, starting at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod has been displaced during sodding operations, the workmen replacing it shall work from ladders or treaded planks to prevent further displacement. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately 1.5 inches below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaces around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

On slopes steeper than 1:2.5 and in V-shaped or flat-bottom ditches or gutters, the sod shall be secured with wooden pegs at least 18 inches long and a cross-sectional area of at least 0.75-square inch, or by other methods of securing sod approved by the MAA

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
Jeffrey P. West 5-5-20
DATE

DESIGN & DRAWINGS BASED ON
MARYLAND COORDINATE SYSTEM (MCS)
HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

KCI TECHNOLOGIES PROJECT No.: 13144992.03

Apr 09, 2020 - 2:05pm User: kevin.jackson
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SEAL

DATE : 04/09/2020

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 200436 , EXPIRATION DATE 09/30/2021 .

ENGINEER: JOHN A. BLONDELL
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DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE	P.W.A. NO.	KEY SHEET	POSITION SHT
				N - SW	11 NE 33 12 NE 34
			R.O.W NO.	N - NE	

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER
REVIEWED BY:							
DATE REVIEWED:							

FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451

DRAWING SCALE
PLAN SCALE:
PROFILE SCALE:

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: DIRECTOR
DATE:
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: CHIEF
DATE:

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER
GRADING / EROSION AND SEDIMENT CONTROL NOTES

SUBDIVISION: HAWTHORNE

ELECTION DIST. NO.:15C6

SHEET DESIGNATION	CONTRACT NUMBER
ES-05	21144 SXO RRB10
	JOB ORDER NUMBER
	231-201-0077-7240
	SHEET 7 OF 8
	DRAWING NUMBER
	2018 - 2457
	FILE NO.: 1 REV. 01/09

Engineer. The pegs shall be driven flush with the surface of the sod. The pegs shall be of sufficient number and at adequate spacing to secure sod from displacement. The use of sod staples or other means of securing the sod from displacement may be approved by the MAA Engineer provided satisfactory results are expected.

3.6 WATERING. Adequate water and watering equipment shall be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. In all cases, watering shall be done in a manner that will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

3.7 ESTABLISHING TURF.

3.7.1 GENERAL. The Contractor shall provide general care for the sodded areas as soon as the sod has been laid and shall continue to provide such care until final inspection and acceptance of the work.

3.7.2 PROTECTION. All sodded areas shall be protected against traffic or other use by warning signs and barricades approved by the MAA Engineer.

3.7.3 MOWING. The Contractor shall mow the sodded areas with approved mowing equipment, depending upon climatic and growth conditions and the needs for mowing of specific areas. In the event that weeds or other undesirable vegetation establishes to such an extent that, either cut or uncut, they threaten to smother the sodded species, the weeds shall be mowed and the clippings raked and removed from the area. Spot applications of an appropriate herbicide by a licensed applicator shall be approved by the MAA Engineer to remove invasive species. The appropriate herbicide shall be determined on a case-by-case basis, depending on the location and type of weed.

3.7.4 REPAIR. When the surface has become gullied or otherwise damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil and shall then be re-sodded as specified in Paragraph 904-3.5, "Placing Sod", at the Contractor's expense.

PART 4 - METHOD OF MEASUREMENT

4.4 This item will be measured on the basis of the area in square yards of the surface covered with sod and accepted.

PART 5 - BASIS OF PAYMENT

5.1 This item will be paid for on the basis of the contract unit price per square yard for sodding. The price will provide full compensation for all labor, equipment, material, staking, and incidentals necessary to satisfactorily complete the items as specified.

Payment will be made under:

Item 329202X.1	Sodding—per square yard.
Item 329202X.2	Amendments – per square yard
Item 329202X.3	Fertilizer – per square yard

END OF SECTION 329202X

SECTION 329203X MULCHING

PART 1 – GENERAL

1.1 DESCRIPTION. This item provides the Contractor with MAA-approved specifications for mulch and the application of mulch including distribution of mulch and securing of mulched areas. Areas to be mulched will be clearly shown on site plans or otherwise designated by the MAA Engineer.

PART 2 – PRODUCTS

2.1 TYPES OF MULCH. Acceptable mulch shall be composed of the materials listed below or composed of any locally available materials that are similar to those specified and approved by the MAA Engineer. Low-grade, shalely, soiled, partially rotted hay, straw, or other materials unfit for animal consumption will not be acceptable for use as mulch. Straw or other material that is fresh, excessively brittle, or is in such an advanced stage of decomposition as to smother or retard the planted grass, is not acceptable. Clean, weed-free straw may be used. Mulch materials containing matured seed with the potential to establish and be detrimental to the project or the surrounding area is not acceptable.

a. Shredded Hardwood Bark. Shredded hardwood bark shall consist of hardwood tree bark that has been milled and screened to ensure a maximum 4-inch (100-mm) particle size, provide a uniform texture, and be free from sawdust, toxic substances, and other foreign materials.

b. Wood Chips. Wood chips shall be produced by a chipping machine to a size specified by the MAA Engineer. Chips may not have been subjected to any conditions that would shorten their useful life or cause them to lose any of their value as mulch. Wood chips shall be free from bark, leaves, twigs, wood shavings, sawdust, toxic substances, and other foreign material.

c. Wood Cellulose Fiber. Wood cellulose fiber shall consist of a processed wood product with uniform fiber characteristics. The fiber shall be capable of remaining in a uniform suspension under agitation in water and blending with seed, fertilizer, and other additives to form a homogeneous slurry. The fiber shall perform satisfactorily in hydraulic seeding equipment without clogging or damaging the system. The slurry shall contain a green dye to provide easy visual inspection for uniformity of application.

Certification showing that the fiber material conforms to the following specifications shall be provided by the manufacturer:

Wood Cellulose Fiber Requirements	
Particle Length, in. (mm)	Approximately 1/2 (13)
Particle Thickness, in. (mm)	Approximately 1/16 (1.5)
Net dry Weight Content	Minimum as stated on bag
TAPPI* T 509, pH	4.0 to 8.5
Ash Content, TAPPI* Standard T 413, % max	7.0
Water Holding Capacity, % min	90

*Technical Association of Pulp and Paper Industry

The material shall be delivered in packages of uniform net weight of 75 lbs (34 kg) or less and shall be clearly labeled with the name of the manufacturer, net weight, and a supplemental statement of the net weight content.

2.2 INSPECTION. Within five days after acceptance of the bid, the Contractor shall provide representative samples of mulch material to be used to the MAA Engineer and identify the source of the material and quantities of mulch materials available. The samples provided may be used as standards with the approval of the MAA Engineer and any materials brought on the site that do not meet these standards may be rejected.

PART 3 – EXECUTION

3.1 ADVANCE PREPARATION. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding unless otherwise specified. The application and spreading of mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

3.2 APPLICATION OF MULCH. The Contractor shall evenly apply mulch materials to areas indicated by site plans or otherwise designated by the MAA Engineer. Cellulose-fiber or wood-pulp mulch shall be applied at the rate of 1,500 pounds (dry weight) per acre. Mulch may be blown on the slopes and use of cutters in the equipment for this purpose will be permitted to the extent that at least 95 percent of the mulch in place on the slope is 6 inches or more in length. When mulch applied by the blowing methods is cut, the loose depth in place shall be 1 to 2 inches. Cellulose fiber or wood-pulp mulch shall be applied as an aqueous mixture by spraying at the rate of 1,500 pounds (dry weight) per acre using spraying equipment approved by the MAA Engineer.

3.3 SECURING MULCH. Mulch shall be held in place by light discing, a thin coating of topsoil, pins, stakes, wire mesh, or other methods approved by the MAA Engineer. If the "peg and string" method is used, the mulch shall be secured with stakes or wire pins driven into the ground on 5-foot centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crossed diagonally over the mulch. The stakes shall be firmly driven nearly flush to the ground to draw the twine down tightly onto the mulch.

3.4 MAINTENANCE OF MULCHED AREAS. The Contractor shall care for mulched areas until final acceptance of the project. Care required may consist of providing protection against traffic or other disturbances by placement of warning signs and/or barricades before or immediately after mulching has been completed.

The Contractor may be required to repair or replace any mulching that is defective or becomes damaged before the project is finished and deemed satisfactory by the MAA Engineer. When, in the judgment of the MAA Engineer, defects or damage result from poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement will be borne by the Contractor. However, once the Contractor has completed the mulching of an area in accordance with the provisions of the specifications and to the satisfaction of the Engineer, no additional work at his expense will be required. Any subsequent repairs and/or replacements deemed necessary by the Engineer may be made by the Contractor and will be paid for as additional or extra work.

PART 4 - METHOD OF MEASUREMENT

4.1 Mulching will be measured in square yards on the basis of the actual surface area acceptably mulched to depths of 1-, 2-, or 4-inch depths.

PART 5 - BASIS OF PAYMENT

5.1 Payment will be made at the contract unit price per square yard for mulching. This price will provide full compensation for furnishing all materials, for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item 329203X.1	Mulching – per square yard at 1-inch depth
Item 329203X.2	Mulching – per square yard at 2-inch depth
Item 329203X.3	Mulching – per square yard at 3-inch depth

END OF SECTION 329203X

Baltimore County Soil Conservation District
APPROVED FOR SEDIMENT CONTROL
Jeffrey P. Watts 5-5-20
DATE

DESIGN & DRAWINGS BASED ON MARYLAND COORDINATE SYSTEM (MCS) HORIZONTAL: NAD 83/91 AND VERTICAL: NAVD 88

SEAL

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 20043G, EXPIRATION DATE 09/30/2021.

DATE : 04/09/2020

ENGINEER: JOHN A. BLONDELL
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DGN BY: JAB
DWN BY: KFJ
CHKD BY: JAB

AS-BUILT / REVISION	BY	DATE

P.W.A. NO.	KEY SHEET	POSITION SHT
	N - SW	11 NE 33
R.O.W NO.	N - NE	12 NE 34

DRAWING SCALE
PLAN SCALE: _____
PROFILE SCALE: _____

BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	SEWER	WATER	FIELD ENGINEER
REVIEWED BY:	FOR ORIGINAL SIGNATURES SEE DRAWING NO. 2018-2451						
DATE REVIEWED:							

DEPARTMENT OF PUBLIC WORKS
APPROVED BY: _____ DIRECTOR
DATE: _____
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED BY: _____ CHIEF
DATE: _____

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

OREMS
BASIN 03 RELIEF SEWER

GRADING / EROSION AND SEDIMENT CONTROL NOTES

SUBDIVISION: HAWTHORNE
ELECTION DIST. NO.:15C6

SHEET DESIGNATION	CONTRACT NUMBER
ES-06	2144 SXO REBID
	JOB ORDER NUMBER
	231-201-0077-7240
	SHEET 8 OF 8
	DRAWING NUMBER
	2018 - 2458
	FILE NO.: 1

KCI TECHNOLOGIES PROJECT No.: 13144992.03

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